

**BEFORE THE  
SURFACE TRANSPORTATION BOARD**

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**FINANCE DOCKET NO. 34662**

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**PETITION OF THE SIERRA CLUB FOR RECONSIDERATION OF THE BOARD'S  
MARCH 14, 2005 DECLARATORY ORDER**

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Jim Dougherty  
Sierra Club-Washington D.C.  
408 C Street, N.E.  
Washington, D.C. 20002  
(202) 488-1140

James R. Wrathall  
Melanie D. Coates  
Marc J. Blitz  
Brian Boynton  
Leondra R. Kruger  
Wilmer Cutler Pickering  
Hale & Dorr LLP  
2445 M Street, N.W.  
Washington, DC 20037  
(202) 663-6000  
(202) 663-6363 (fax)

Dated: April 4, 2005

The Sierra Club, pursuant to 49 C.F.R. § 1115.3(a), hereby files its Petition for Reconsideration to the Honorable Board's Decision of March 14, 2005 in this Matter ("Decision"). A petition will be granted on a showing of new evidence, or changed circumstances, or material error. *See id.* § 1115.4.

The Sierra Club believes that the Decision is marked by significant material error. As the District of Columbia pointed out in its Petition for Reconsideration, the Board in its Decision "reverses itself in the face of precedent it has not persuasively distinguished," *Louisiana Public Service Commission v. FERC*, 184 F.3d 892, 897 (D.C. Cir. 1999), and "fails to 'consider[ ] all the relevant factors' in reaching its decision." *New York Cross Harbor R.R. v. STB*, 374 F.3d 1177, 1181 (D.C. Cir. 2004) (citation omitted). The root of the Decision's material error is the mistaken assumption that the Board can interpret 49 U.S.C. § 10501 and apply it to the specific circumstances of the District of Columbia Terrorism Prevention in Hazardous Materials Transportation Emergency Act of 2005 ("Terrorism Prevention Act") in a legal and factual vacuum. First, the Board mistakenly finds that it can interpret Congress's express statutory grant of state and local power over rail safety and security issues while entirely ignoring the specific language of the Federal Rail Safety Act ("FRSA"), in 49 U.S.C. § 20106, that contains this statutory grant of state power. In light of the presumption against implied repeal of congressional enactments, federal courts have emphasized that the preemption provision of the ICC Termination Act ("ICCTA") and the FRSA must "be construed *in pari materia*." *Tyrrell v. Norfolk Southern Railway*, 248 F.3d 517, 523-24 (6th Cir. 2001).<sup>1</sup> And although the Board's

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<sup>1</sup> As the Sixth Circuit recognized in *Tyrrell*, the ICCTA did not "implicitly repea[l] the FRSA's first saving clause," preserving state authority to issue rail safety laws where the federal government has failed to Act. *Id.* at 523. The Board cites *Tyrrell*, but then entirely ignores its argument against implicit repeal--adopting an interpretation of the ICCTA that deprives states of

Decision concedes the point, Decision at 9, the Decision never analyzes nor even cites § 20106. The result is a decision that adopts precisely the position that courts and the Board alike have rejected: that 49 U.S.C. § 10501 somehow impliedly repeals the FRSA.<sup>2</sup>

The deficiency of the Decision’s preemption analysis becomes clear when one examines the Decision alongside the statutory language and Supreme Court precedent that the Decision ignores. The Board’s conclusion that Congress decided to leave *no* room for *any* “state and local regulation of activities related to rail transportation,” Decision at 7, is plainly inconsistent with 49 U.S.C. § 20106, which expressly gives states power to “adopt . . . a law, regulation, or order related to railroad safety or security until the Secretary of Transportation (with respect to railroad safety matters) or the Secretary of Homeland Security (with respect to railroad security matters) prescribes a regulation or issues an order covering the subject matter of the state requirement.” 49 U.S.C.A. § 20106 (2004). Obviously, states could not adopt a measure relating to the safety and security of rail transportation, as Congress expressly allows them to do, if (as the Board finds) states cannot regulate rail transportation *at all*. See *Tyrrell*, 248 F.3d at 524.

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expressly granted FRSA powers and misinterpreting *Tyrrell* as a decision that required only that the Board share its power over rail safety and security with other *federal* agencies. See Decision at 10. But this conclusion overlooks *Tyrrell*’s key holding, which was that the decision it reversed had “erroneously” held that the ICCTA’s limited preemption clause “preempts *state* rail safety law that is saved under FRSA.” 248 F.3d at 522.

<sup>2</sup> The Board has previously consistently stated that “§ 10501(b) does not preempt valid safety regulation under the Federal Rail Safety Act.” See, e.g., *Green Mtn. R.R. Corp.—Petition for Declaratory Order*, STB Fin. Docket No. 34052, at n.8 (May 28, 2002); *Friends of the Aquifer, City of Hauser, ID, Hauser Lake Water Dist., Cheryl L. Rodgers, Clay Larkin, Kootenai Env’t Alliance, R.R. and Clearcuts Campaign*, STB Fin. Docket No. 33966, at n.11 (Aug. 10, 2001); *Borough of Riverdale—Petition for Declaratory Order—The New York Susquehanna & Western Ry. Corp.*, STB Fin. Docket No. 33466, at 2 n.4 (Feb. 27, 2001).

The Board's conclusion that "Congress has broadly divested states and localities of a regulatory role over rail transportation," Decision at 8 -- including those aspects of such regulation related to rail safety and security -- simply cannot be reconciled with the Supreme Court's conclusion in *CSX Transportation v. Easterwood* that the FRSA preemption provision not only allows room for a continued state presence in rail safety regulation, but "displays considerable solicitude for state law." 507 U.S. 658, 664-65 (1993). To the extent the Board's decision implies that this Supreme Court ruling is no longer valid, after the 1995 passage of the ICCTA, this implication has been squarely rejected by those courts to examine the effect of the ICCTA on the FRSA's preemption provisions. Thus, the Sixth Circuit stressed in *Tyrrell* that the "the Supreme Court specifically held that a presumption *against* federal preemption is embodied in the saving clauses of 49 U.S.C. § 20106," 248 F.3d at 524 (emphasis added), and clearly assumed that this presumption against federal preemption was still an integral part of rail safety and security law in 2001. The Fifth Circuit similarly found in 2000 that "FRSA preemption is even more disfavored than preemption generally," and "when deciding whether the FRSA preempts state laws designed to improve railroad safety, [courts must] interpret the relevant federal regulations narrowly to ensure that the careful balance that Congress has struck between state and federal regulatory authority is not improperly disrupted in favor of the federal government." *United Transp. Union v. Foster*, 205 F.3d 851, 860 (5th Cir. 2000) (citation omitted). The Decision not only ignores this widely-recognized presumption against federal preemption, it purports to establish a presumption flatly inconsistent with it, ruling out all direct state regulation of rail safety and security.

The Decision does not make its implicit repeal of the FRSA any more plausible by stating that states and localities may continue to pass non-railroad regulations, such as zoning

regulations, that “have merely incidental effects on rail operations.” Decision at 10. In order to pass safety or security regulations (under 49 U.S.C. 20106) that are useful in achieving their goals, a state may well have to regulate a rail carrier directly, rather than trying to do so in a circuitous fashion by passing other types of regulations with only an “incidental” effect on how a railroad operates.<sup>3</sup> Nothing in the FRSA purports to limit states’ rail regulatory authority to passing measures on other subjects that have “merely incidental effects on rail operations.” Moreover, the clear inconsistency between the Board’s Decision and the language of the FRSA (as well as judicial interpretations of that language) cannot be justified by the Board’s long string cite, Decision at 7-8, which does not include *any* cases preempting states from exercising the rail safety authority preserved for them under the FRSA.

Tellingly, the Decision fails to follow its implied repeal of 49 U.S.C. § 20106 to its logical conclusion. Because the ICCTA provides that the STB’s jurisdiction under § 10501(b) “preempt[s] the remedies provided *under Federal or State law*,” the Decision’s reasoning means that § 10501(b) must preempt not only state or local regulation of rail security matters, but must also invalidate regulation by the Department of Transportation (“DOT”) and the Department of Homeland Security (“DHS”). *See* Decision at 10.

The Board also errs by assuming it can assess the effect of the District’s Terrorism Prevention Act in a factual vacuum. To be sure, the Board does *reach and rely upon* on a factual conclusion -- that the Terrorism Prevention Act would “unreasonably interfere with interstate

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<sup>3</sup> *See, e.g., Tyrrell v. Norfolk S. Ry.*, 248 F.3d 517, 523-24 (6th Cir. 2001) (upholding direct state regulation of railroad track construction in order to safe track clearances); *Washington v. Chicago, Milwaukee, St. Paul & Pac. R.R.*, 79 Wash. 2d 288, 293 (1971) (finding that state was empowered to act under FRSA and that, under any other result, “the state would be left with an untenable void—without the protection of federal regulations, yet, at the same time, prevented from enacting regulations of its own for the protection of the property of its citizens against an obvious and serious hazard”).

commerce,” Decision at 11-- and confusingly does so after stating that investigation of factual issues is entirely unnecessary since the STB does not need to “make any factual findings in this decision.” *Id.* at 6. The Board’s decision does not explain its conclusion that the Terrorism Prevention Act would unreasonably interfere with interstate commerce. It does not say whether, in reaching this conclusion, it simply took at face value various claims that CSX Transportation, Inc. (“CSX”) made in its Petition about alternative routes and cost impacts, as well as Norfolk Southern’s unprecedented and unsupported claims that it would refuse to allow CSX to use its tracks (despite this Board’s power to override such refusal). As the Sierra Club and the District have demonstrated in proceedings currently taking place in the United States District Court for the District of Columbia, these factual claims by CSX are unsupported by analysis or cost calculations, and at odds with factual evidence that the Sierra Club and the District have introduced in that proceeding regarding alternative routes and cost information that CSX does not mention in its filing before the Board.

The Sierra Club’s and the District’s comments to the Board, filed on February 16, 2005, pointed out that CSX’s claims were highly questionable and asked for the opportunity to explore their factual basis, but the Board did not give either the Sierra Club or the District an opportunity to do so. The Board thus concluded that the Terrorism Prevention Act would unreasonably interfere with interstate commerce and with CSX’s operations without considering the evidence that has now been presented to the United States District Court for the District of Columbia regarding (1) the alternative routes that CSX might use to comply with the Terrorism Prevention Act, (2) the miniscule percentage of rail shipments that would have to be rerouted in such compliance, or (3) the lack of any systematic calculations to back up CSX’s claims about the effect that the Terrorism Prevention Act would allegedly have on its operational costs. The

Sierra Club is submitting with this filing the Exhibits it filed regarding these issues in the District Court, as well as numerous exhibits on the grave terrorism threat that the District's Terrorism Prevention Act addresses. *See* Exs. on the Petition for Reconsideration Nos. 1-11 attached hereto.

### **CONCLUSION**

For the foregoing reasons, the Sierra Club requests that the Honorable Board grant its petition for reconsideration of the Board's Decision and find that there is no basis to find the Terrorism Prevention Act preempted.

**Petition for Reconsideration  
to STB**

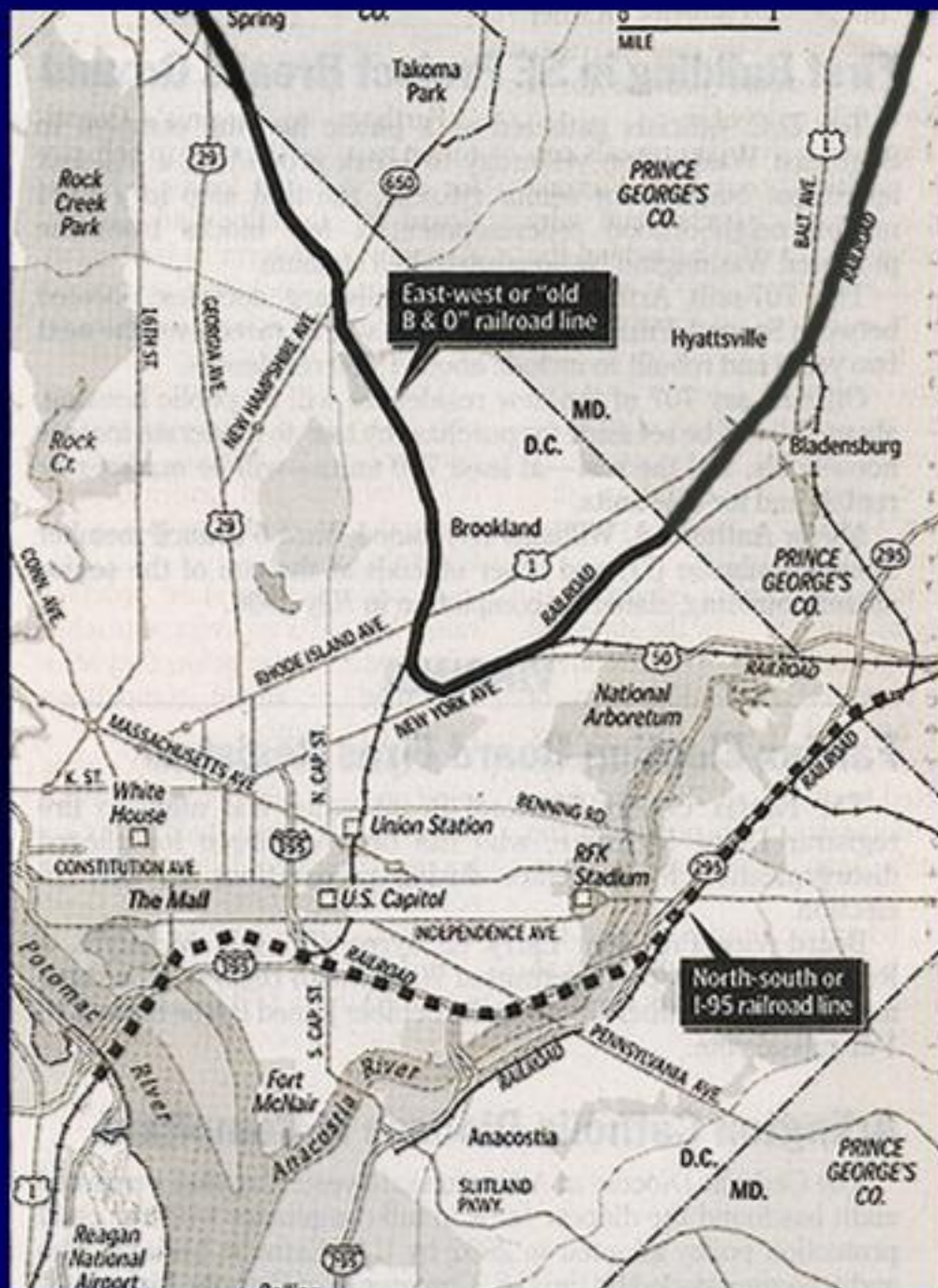
**Exhibit 7**



# Terrorism Against Ultra-HazMat Cargoes In Washington



## Rail Lines in D.C.



## D.C. : A Likely Future Target

FBI Director Mueller:

"There are strong indications that al Qaeda will revisit **missed targets** until they succeed," Mueller said, "such as they did the World Trade Center. And the list of **missed targets now includes both the White House as well as the Capitol.**"

*"Tenet Warns of al Qaeda Threat,"*

*Washington Post, p. 1, Feb. 25 2004*



# Hazmats Railcars: Vulnerable

- Hazmats railcars are designed to survive accidents.
- They are not designed to withstand a terrorist attack by explosive or rifle or bazooka.



- "If you ...decide to cause a major disaster near our state or nation's Capitol, a hand-held grenade launcher could easily puncture a rail car [of] deadly... suffocating gases that can kill thousands of people within minutes." *(Ken Kertesz, official for union of Locomotive Engineers in PA)*

# Rail Cars are Accessible





# Terrorists have easy access to the rails



At 9<sup>th</sup> St. SW

At S. Capitol St.



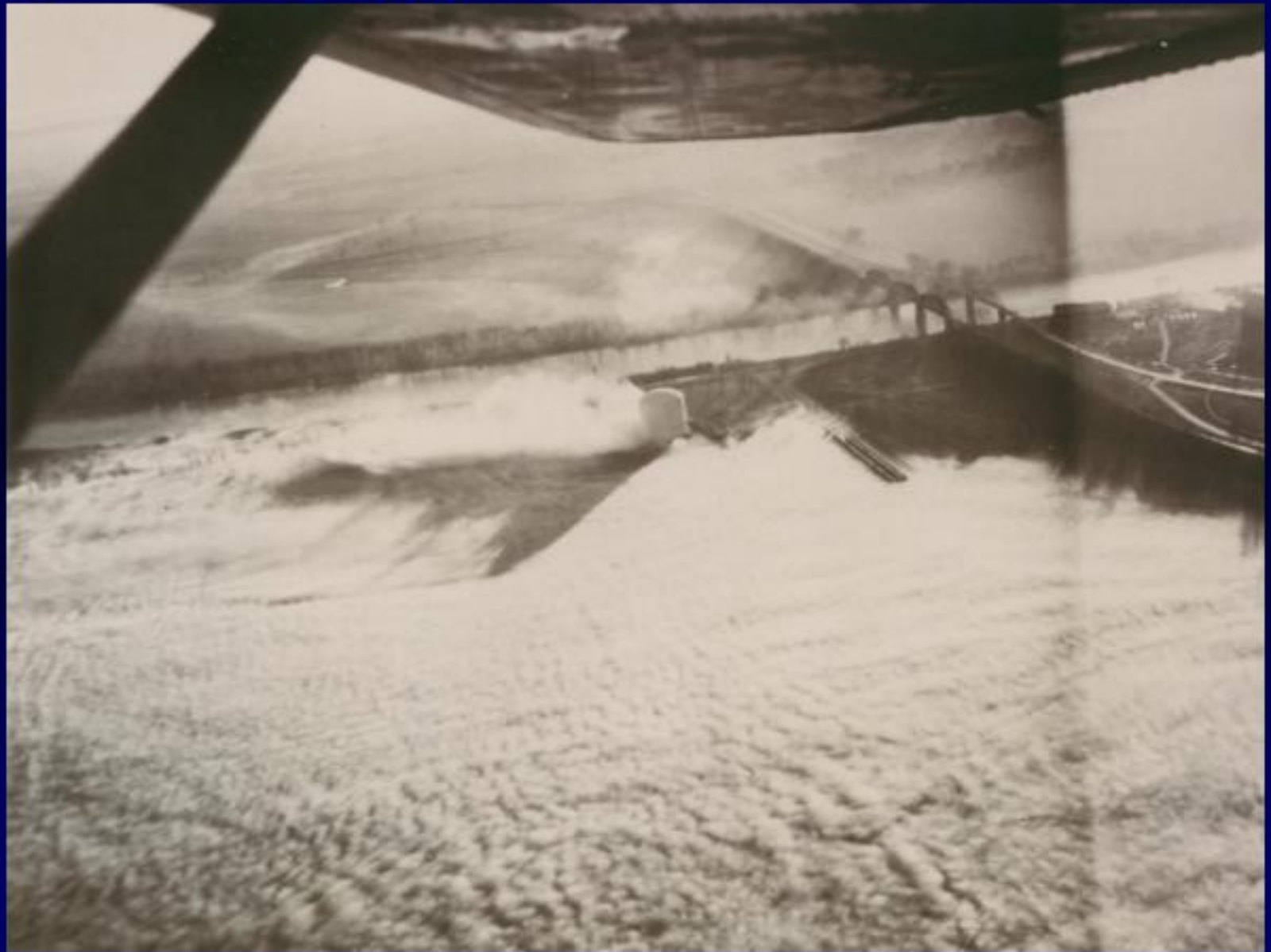


## **Madrid Train Bombs Kill at Least 190 10 Bombs Detonate Almost at Once; Nearly 1,500 Hurt**

Washington Post March 12, 2004



**Anhydrous Ammonia spill, Blair, NE, 1970  
(ground-hugging plume)**

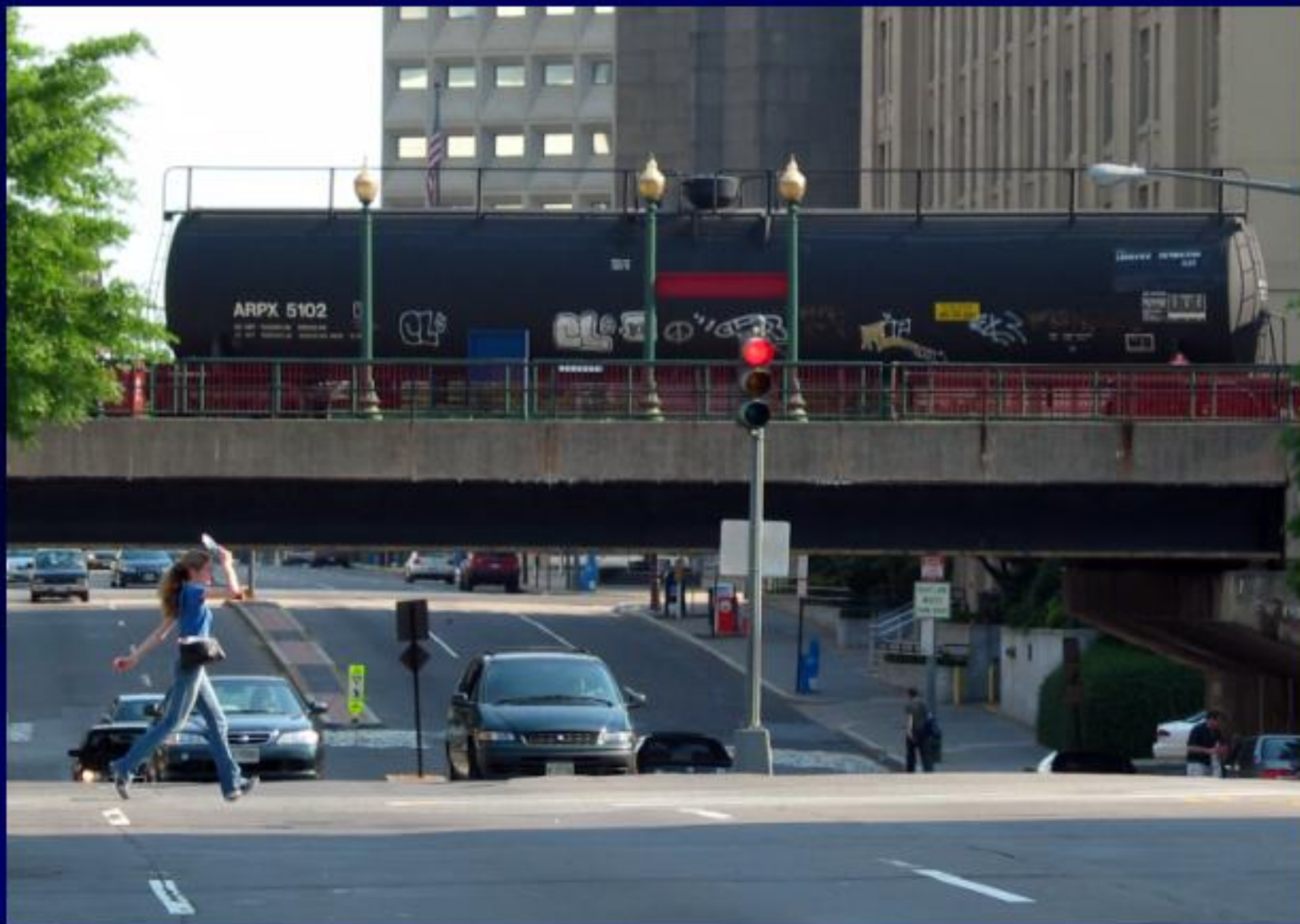




## Propane Tank explosion, Crescent City, IL, 1970



# Liquefied Propane Crossing 7<sup>th</sup> St. SW.



# ESTIMATING THE AREA AFFECTED BY A CHLORINE RELEASE

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Edition 3

April 1998



THE CHLORINE INSTITUTE, INC.



PAMPHLET 74



## 4.4.4 90-Ton Rail Tank Car

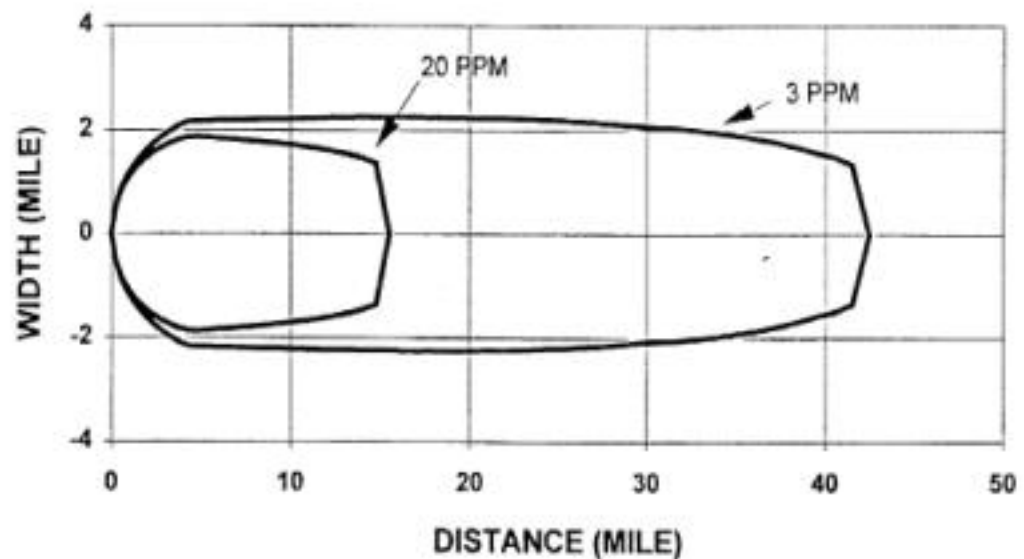
- total mass release = 180,000 pounds
- 10 minute release
- 300 pounds/second steady rate release
- release occurs on concrete surface

Maximum downwind distance to 3ppm = 41.5 miles

Maximum crosswind distance to 3ppm = 2.3 miles

Maximum downwind distance to 20ppm = 14.8 miles

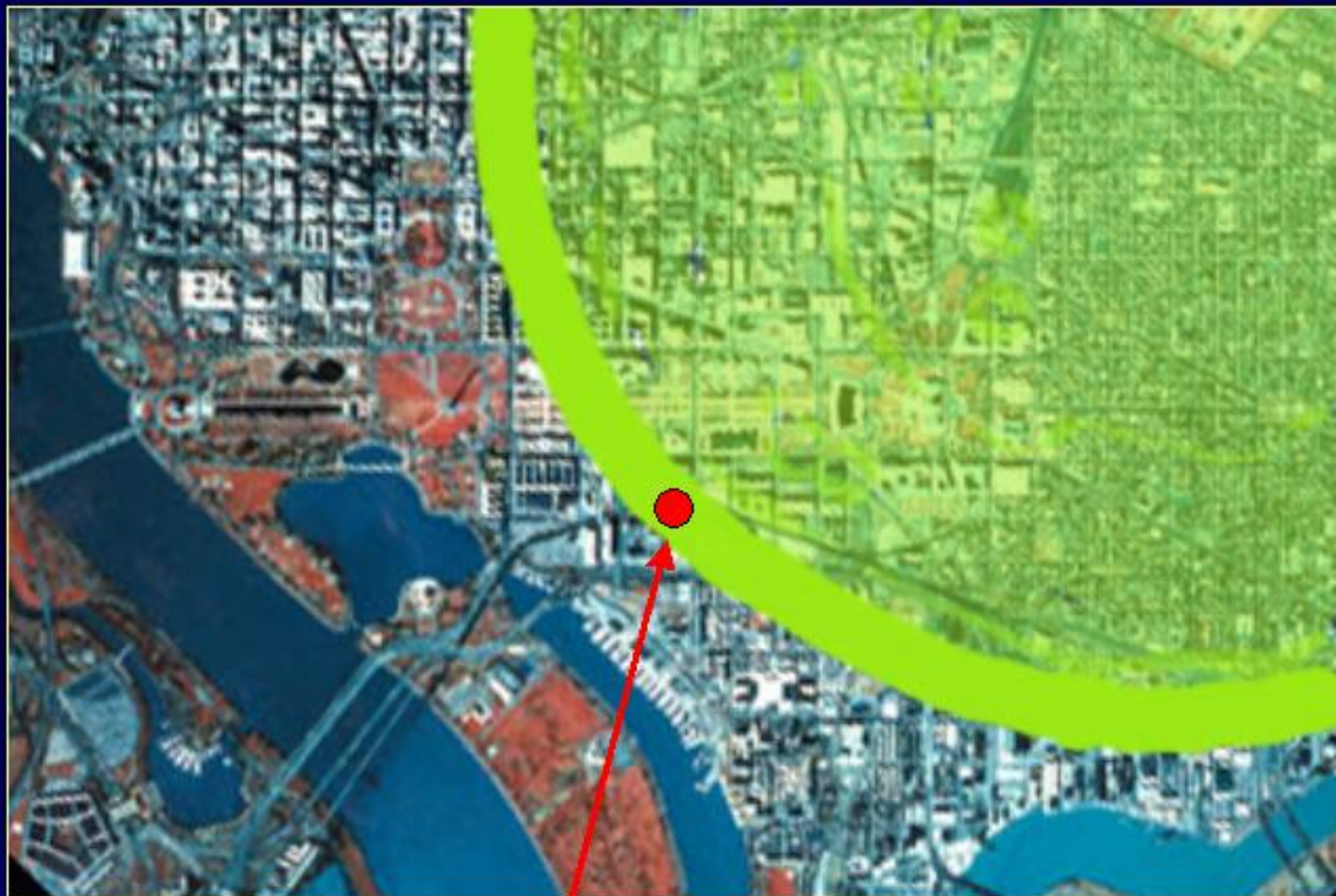
Maximum crosswind distance to 20ppm = 1.9 miles



Note: The scales on the X and Y axes are different.

# The Chlorine Industry Estimates the Size and Shape of a Plume Released by a Rail Tank Car

# Chlorine Plume Map Superimposed over DC

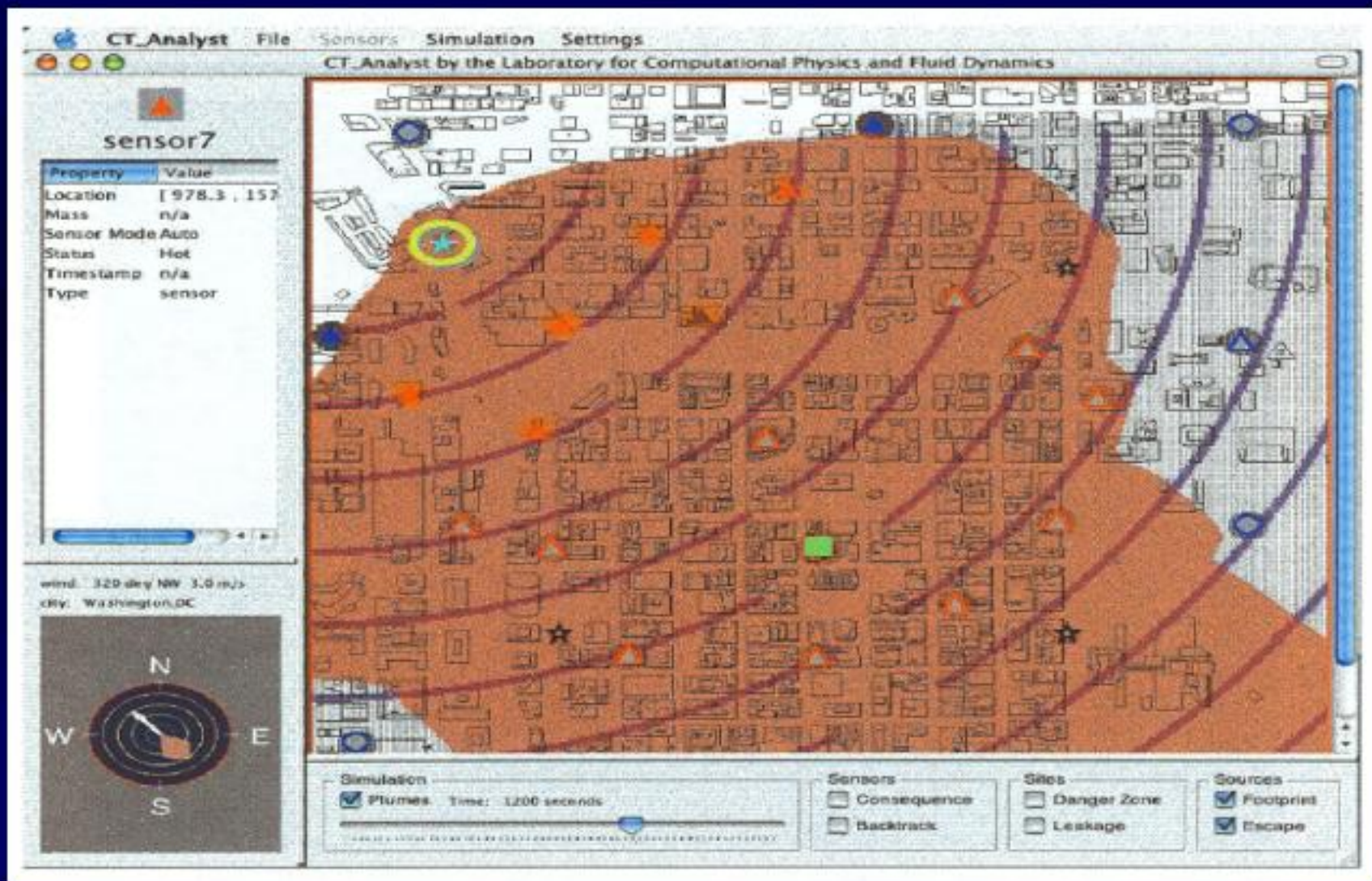


Assumption: 90-ton release at L'Enfant Plaza; wind from SW

Sierra Club



# U.S. Naval Research Lab: Worst Case Scenario: 100,000 dead in ½ Hour







[ The Washington Post ]

# RETRO

MONDAY, OCTOBER 25, 2004

**B**

*Federal Diary  
Obituaries  
Weather*

DC MD VA



BY ANDREW BRUCE WATKINS — THE WASHINGTON POST

ets her freshman unit at VMI, which has made strides in accepting women into the corps, some say.

## Hazmat Rerouting Decision Delayed

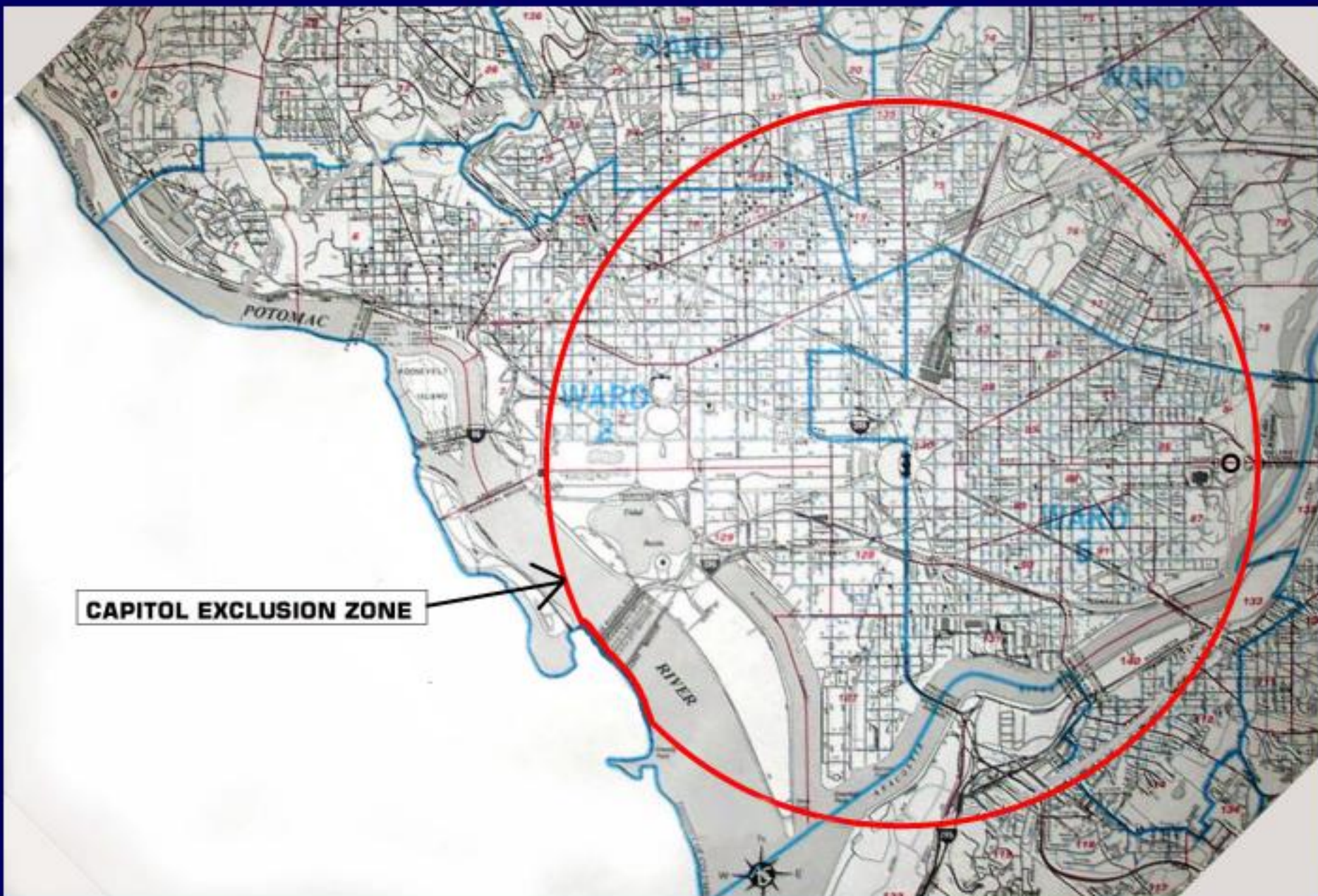
### White House Accused Of 'Playing Politics' Over D.C. Rail Line

By SPENCER S. HSU and SARI HORWITZ  
*Washington Post Staff Writers*

D.C. lawmakers and environmentalists are accusing the Bush administration of waiting until after the Nov. 2 election to decide whether to require railroads to route hazardous materials around Washington, charging that security is taking a back seat to politics.

Since the District introduced legislation a year ago to bar hazardous material shipments from a CSX Corp. rail line through the city, the Transportation Security Administration has missed several self-im-





**CAPITOL EXCLUSION ZONE**

## Mid-Atlantic Corridor

CSX, NS, and Amtrak Rail Service



I-95 Corridor Coalition

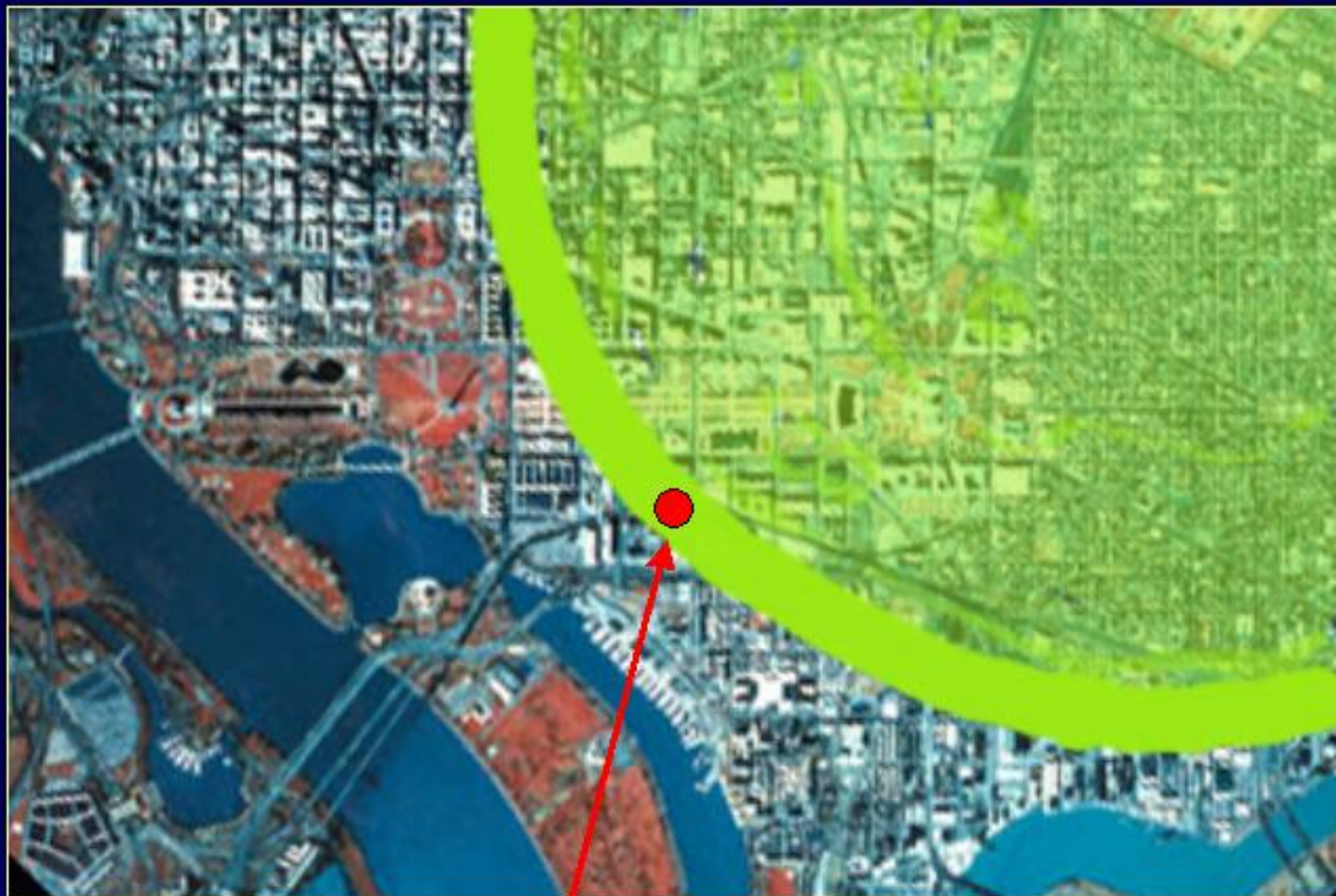


# Chlorine shipment on March 11, 2005

(Photo analysis showing tank car riding low on tracks)



# Chlorine Plume Map Superimposed over DC



Assumption: 90-ton release at L'Enfant Plaza; wind from SW

Sierra Club



**Petition for Reconsideration  
to STB**

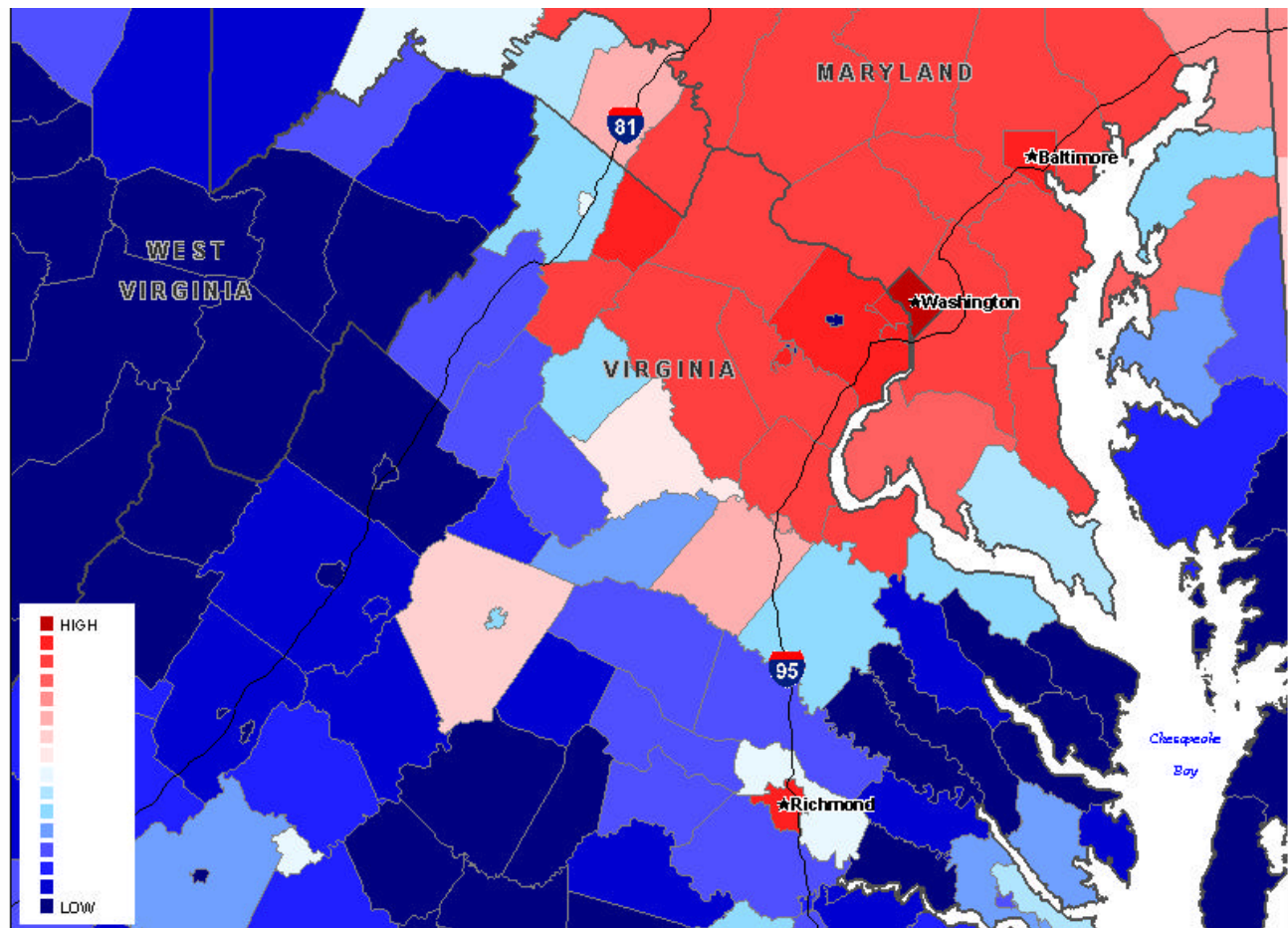
**Exhibit 6**

## RELATIVE TERRORISM RISK PROFILE IN THE DISTRICT OF COLUMBIA REGION

April 22, 2004

AIR Worldwide Corporation (AIR) has conducted a terrorism risk assessment to compare potential insured losses from terrorism in regions across the United States. The analysis considers a comprehensive set of potential terrorist targets, weapons (including conventional and weapons of mass destruction), and the resulting modeled insured losses.

AIR's analysis is presented below on an average commercial property loss-per-insurable-dollar basis for the counties surrounding Washington, D.C. At this level we see that the District of Columbia has the highest risk followed by the Baltimore City area and then the immediately surrounding counties of northern Virginia and Maryland. Counties to the west of Interstate 81, southwest of Richmond, and east of Richmond have the lowest risk value.



Relative Risk of Commercial Property Loss to Terrorism by County



AIR's Terrorism Loss Estimation Model, employed by the insurance industry since 2002 for portfolio management and underwriting, is also used by property owners to assess terrorism risk and determine the impact of security measures on potential insured losses. The model provides a detailed assessment based on millions of possible events across the United States.

This information is also available through AIR consulting services for individual ZIP Codes and for individual locations. This more finely reflects the risk of proximity to potential terrorism events. Also, AIR provides loss estimates for a wide range of terrorist attack types and locations chosen for analysis (deterministic loss analysis).

The terrorism risk estimates presented above are based on modeled results of the potential losses that may occur in the event of such attacks; they are not factual and do not predict future events. Actual loss experience can differ materially. They are intended to function as one of several tools for use in analyzing potential losses from terrorist attack. The assumptions that AIR used in creating them may not constitute the exclusive set of reasonable assumptions and methodologies. The use of alternative assumptions and methodologies could yield materially different results.

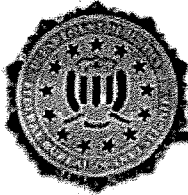
### **About AIR Worldwide Corporation**

AIR Worldwide Corporation is a leading risk modeling company helping clients manage the financial impact of catastrophes and weather. Utilizing the latest science and technology, AIR models natural catastrophes in more than 40 countries and the risk from terrorism in the United States. Other areas of expertise include site-specific seismic engineering analysis, catastrophe bonds, and property replacement cost valuation. Founded in 1987, AIR offers its insurance, reinsurance, corporate and government clients a complete line of risk modeling software and consulting services that produce consistent and reliable results. Headquartered in Boston, AIR has additional offices in North America, Europe and Asia. For more information, please visit [www.air-worldwide.com](http://www.air-worldwide.com).



# **Exhibit 19**





## **U.S. Department of Justice Federal Bureau of Investigation**

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**For Immediate Release  
October 24, 2002**

**Washington D.C.  
FBI National Press Office**

On October 23, the FBI distributed through the NLETS communications system, an intelligence update warning state and local law enforcement of recent reporting that al-Qa'ida is targeting the U.S. railway sector. Information from debriefings of al-Qa'ida detainees as of mid-October indicates that the group has considered directly targeting U.S. passenger trains, possibly using operatives who have a Western appearance.

This threat communication followed one issued on October 9, by the FBI, the Office of Homeland Security and other federal agencies, warning of heightened operational intensity on the part of al-Qa'ida and loosely affiliated terrorist organizations.

The U.S. Intelligence Community continues to assess that al-Qa'ida plans to attack targets that they believe would be readily recognized as representing U.S. economic interests. Additional information suggests operatives may try a variety of other attack strategies, such as destroying key rail bridges and sections of track to cause derailments or targeting hazardous material containers. Recently captured al-Qa'ida photographs of U.S. railroad engines, cars, and crossings heighten the intelligence community's concern of this threat.

The attack of the French oil tanker off the coast of Yemen and additional information from al-Qa'ida detainees suggest plans exist to continue attacks against the global petroleum sector. According to this information, al-Qa'ida plans to weaken the petroleum industry by conducting additional sea based attacks against large oil tankers and that such attacks may be a part of more extensive operations against port facilities and other energy-related targets including oil facilities and nuclear power plants.

In addition, the U.S. Intelligence Community continues to receive general threat reporting on such sectors as, the airline and maritime industries, financial sector and government facilities and installations.

The United States Government, working with state and local law enforcement, the railway industry, and other sectors, has begun the immediate implementation of additional protective measures including increased presence of law enforcement officers, increased surveillance of critical areas and improved physical protections.

The Department of Transportation security staff, the TSA and the Federal Railroad Administration have worked closely with the American Association of Railroads (AAR) to review the current threat data for rails and to implement enhanced rail security measures. AAR represents North American freight rails as well as Amtrak. On Tuesday, AAR and DOT held a security briefing for members' law enforcement chiefs about the current threat information and coordinated implementation of enhanced security measures. Amtrak has increased patrolling of its facilities and trains and all freight rails implemented additional security measures. Other DOT components, including the United States Coast Guard, Federal Transit Administration and the Federal Motor Carrier Safety

Administration have implemented additional security measures as well.

The FBI Counterterrorism Division has urged state and local law enforcement to discuss appropriate measures for their respective communities with their designated joint terrorism task force and to continue to take all prudent steps to detect, disrupt, deter, and defend against potential attacks against critical infrastructure and installations.

The National Infrastructure Protection Center of the FBI has contacted the private sector Information Sharing and Analysis Centers (ISACs) that represent various sectors of the economy. A primary NIPC mission is to issue warnings regarding threat conditions to private sector ISACs and the owners and operators along with appropriate guidance on additional protection measures to be taken.

The Department of Energy's Office of Energy Assurance has contacted key energy infrastructure facilities and is working with them to enhance the security environment to deter and/or disrupt potential attacks.

The Environmental Protection Agency has contacted the American Chemistry Council, Chlorine Institute, American Petroleum Institute, Synthetic Organic Chemical Manufacturers Association, National Association of Chemical Distributors, the Fertilizer Institute and CropLife America. These organizations are communicating with their members and recommending additional security precautions.

Due to the lack of specificity of method, location, and timing, the Homeland Security Advisory System threat level will remain at yellow (elevated), at this time.

## **Exhibit 20**

### **Attachment 3: Articles demonstrating extensive interchanges by railroads**

#### **CSX Transportation, Union Pacific Reach Historic Interchange Agreement**

Contacts: Kathy Burns  
CSX Transportation  
904/359-1419

John Bromley  
Union Pacific Railroad  
402/271-3475

#### **CSX TRANSPORTATION, UNION PACIFIC REACH HISTORIC INTERCHANGE AGREEMENT**

**JACKSONVILLE, FL and OMAHA, NE - March 31, 1999** - CSX Transportation Inc. (CSXT) and Union Pacific Railroad (UNP) today announced an industry-first agreement that will streamline east-west rail traffic through major gateways that connect the two railroads.

The two railroads will use pre-planned, mutually beneficial gateways through a new formalized structure that will make the best use of CSXT's expanded network by matching it with the UP system.

Although railroads traditionally "pre-block" freight cars for connecting railroads, this is the first time the process will use a formal, structured plan to direct flows through the most advantageous gateways, which will speed traffic and maximize the use of each interchange point.

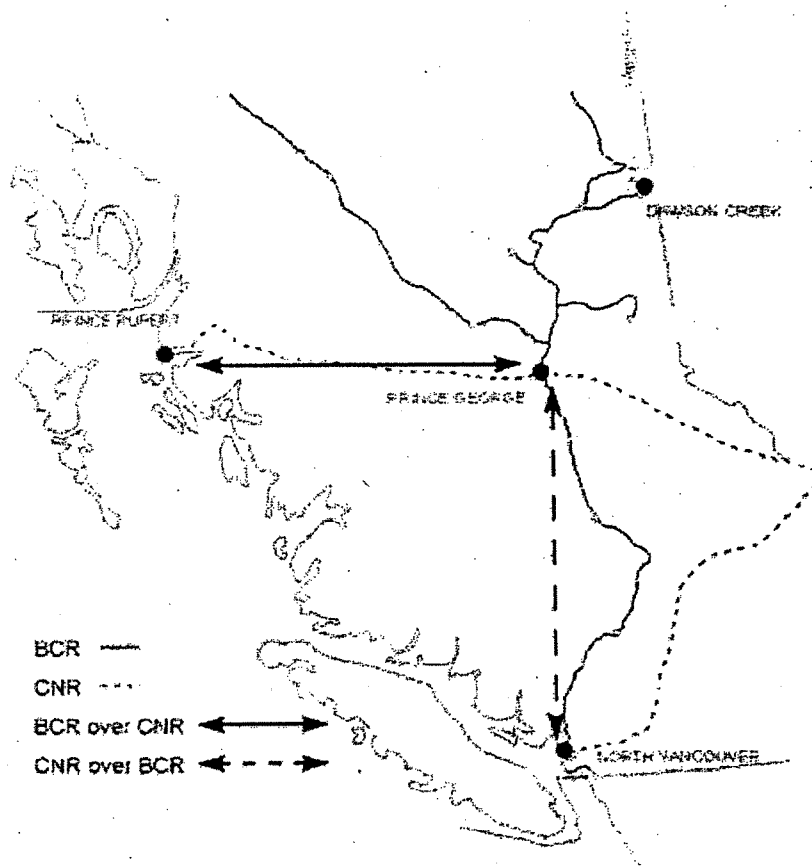
"Customers will be the big winners as a result of this cooperative effort between our two railroads," said Aden Adams, senior vice president-merchandise sales and marketing at CSXT. "This agreement means each railroad will be able to offer run-through service at key gateways, eliminating delays and improving cycle time on these movements."

"It is very important that Union Pacific be able to move freight across the country as seamlessly as possible," said Jack Koraleski, UP executive vice president-marketing and sales. "This agreement will organize our traffic, allow us to do better planning and make the best use of our system."

CSXT's and UP's major interchange points are Chicago, St. Louis, Salem, IL, Memphis and New Orleans. Transition to the new routing is expected to take six months to a year.

CSXT and its 28,000 employees provide rail transportation and distribution services over an 18,300 route-mile network in 20 states, the District of Columbia and Ontario, Canada. With the integration of Conrail, CSXT will continue to be the largest railroad in

# **Exhibit 21**



Most importantly, this agreement provides competitive access provisions to the ports of Prince Rupert and Vancouver for rail customers in the province whether they are served by BC Rail or CN. This represents a significant effort on the part of BC Rail and CN to facilitate new growth and economic development for the province.

Customers located in the north or the central interior of British Columbia can now access all ports on a seamless rail transportation system. The primary features of the agreement are as follows:

- BC Rail will have commercial access on new business to the Port of Prince Rupert, and will be responsible for the marketing from points on BC Rail. Traffic to intermediate destinations on CN is not included.
- CN will have commercial access on new business to Vancouver via BC Rail trackage from Prince George. CN will be responsible for the marketing from points on CN.
- Commodities include forest products, general freight (excluding dangerous commodities and oversize or dimensional loads) and coal to Prince Rupert.
- Each railway will be responsible for providing adequate crews, locomotives power and transit times to handle the additional traffic volumes.

## **Exhibit 22**

SUBJECT TO CLASSIFICATION REVIEW

Staff Report, August 26, 2004

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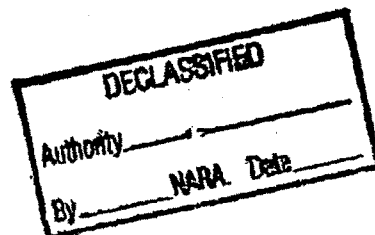
Preface

Part 1. "We Have Some Planes": The Four Flights—a Chronology

- 1.1 American Airlines Flight 11
- 1.2 United Air Lines Flight 175
- 1.3 American Airlines Flight 77
- 1.4 United Air Lines Flight 93
- 1.5 Hijacker Tactics

Part 2. Civil Aviation Security and the 9/11 Attacks

- 2.1 The Threat
- 2.2 The Civil Aviation Security layers
- 2.3 The Stage Is Set



SUBJECT TO CLASSIFICATION REVIEW



## PART II: CIVIL AVIATION SECURITY AND THE 9/11 ATTACKS

### 2.1 THE THREAT

**Pre-9/11.** A great challenge in conducting an analysis of a catastrophic and transformational event is trying to recapture the reality of that time as experienced by the people who lived it, including those in policymaking positions. Hindsight confers an enhanced understanding of the rush of past events, but the perspective it provides can be distorted. To answer fully the question of why the civil aviation system failed to stop the attacks that day, we must recall the world before September 11.

Former FAA administrator Jane Garvey testified:

On September 10, we were not a nation at war. On September 10, we were a nation bedeviled by delays, concerned about congestion, and impatient to keep moving. . . And on September 10, based on intelligence reporting, we saw explosive devices on aircraft as the most dangerous threat. We were also concerned about what we now think of as traditional hijacking, in which the hijacker seizes control of the aircraft for transportation, or in which passengers are held as hostages to further some political agenda.<sup>421</sup>

The Commission staff found no evidence that the FAA knew, or possessed intelligence indicating, that Bin Ladin, al Qaeda, al Qaeda affiliates, or any other group was plotting to hijack commercial planes in the United States and use them as weapons.<sup>422</sup> Administrator Garvey and Claudio Manno, Director of FAA's Office of Civil Aviation Intelligence on 9/11, testified to that effect before the Commission.<sup>423</sup>

Nevertheless, the FAA had indeed considered the possibility that terrorists would hijack a plane and use it as a weapon. In the spring of 2001, FAA intelligence distributed an unclassified CD-ROM presentation to air carriers and airports, including Logan, Newark, and Dulles. The presentation cited the possibility that terrorist might conduct suicide hijacking but stated: "fortunately, we have no indication that any group is currently thinking in that direction."<sup>424</sup>

[REDACTED]

Many officials pointed out to us that despite numerous reports and assessments regarding the growing terrorist threat, the U.S. civil aviation system had been enjoying a period of relative peace. By 2001, it had been over a decade since a U.S. air carrier had been hijacked or bombed.<sup>426</sup>

~~SUBJECT TO CLASSIFICATION REVIEW~~

Even terrorist experts perceived positive trends. Writing in 1999, aviation security expert and former Gore Commission member Brian Jenkins observed that the battle between terrorism and security has "continued for the past 30 years with security gradually gaining. In the early 1970s, more than 30 percent of international terrorist attacks were targeted against commercial aviation; it is less than 10 percent today."<sup>427</sup>

The absence of attacks instilled a confidence that U.S. counterterrorism, at least domestically, was working, allowing the FAA to focus on other serious policy challenges facing civil aviation, including capacity problems, the industry's economic woes, the demand for better customer service, and the ever present issue of safety. To the extent there was a threat, numerous FAA and air carrier officials told us the threat was predominantly overseas.

The fact that the civil aviation system seems to have been lulled into a false sense of security is striking not only because of what happened on 9/11 but also in light of the intelligence assessments, including those conducted by the FAA's own security branch, that raised alarms about the growing terrorist threat to civil aviation throughout the 1990s and into the new century. This heightened threat was attributed in large part to Usama Bin Ladin who, in 1998, had declared war on the United States and also threatened to attack aviation, including the hijacking of U.S. aircraft.<sup>428</sup>

*Redacted*

Numerous documents, reports and assessments produced by the FAA's intelligence division through the late 1990s and up to 9/11 reported on the growing threat posed by terrorists. For example, between March 14 and May 15, 2001, the FAA's Office of Civil Aviation Intelligence conducted a series of classified briefings for security officials at 19 of the nation's largest airports, including Newark, Boston's Logan and Washington Dulles. The briefing highlighted the threat posed by terrorists in general and Bin Ladin in

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particular, including his threats against aviation. The renewed interest in hijacking by terrorist groups was also covered.<sup>430</sup>

**Perceived Aviation Security Threat.** While hostage taking was the dominant concern in regard to hijacking, sabotage was the threat that concerned civil aviation security officials most. After 9/11, FAA Administrator Garvey told a Senate Committee that prior to that day, "all our Security Directives, all of our security recommendations have been geared toward explosives. This [9/11] was a whole new world for us."<sup>431</sup> She later told the Commission that "based on intelligence reporting, we saw explosive devices as the most dangerous threat."<sup>432</sup>

An act of sabotage or a traditional hijacking to obtain hostages was the threat to aviation foremost in the mind of FAA security officials during the summer of 2001, [REDACTED]

The concern grew in the Spring of 2001 when al Qaeda operative Ahmed Ressam (who planned to bomb Los Angeles International Airport at the millenium) and the al Qaeda conspirators who blew up two U.S. embassies in Africa in 1998 were convicted in U.S. courts.<sup>433</sup>

One of the FAA's liaisons to the intelligence community told the Commission that the intelligence community sensed, particularly in June and July 2001, that "something was going to happen" that summer. Most of the community, he said, was looking for the event to occur abroad.<sup>434</sup>

Much of this threat information was contained in the daily intelligence summaries produced by FAA's security branch for the agency's leaders. The summaries were based on reporting it received from the U.S. intelligence community and other sources. Among the 105 summaries issued between April 1, 2001, and September 10, 2001, almost half mentioned Bin Ladin, al Qaeda, or both, mostly in regard to overseas threats.<sup>435</sup>

Of the 52 summaries mentioning Bin Ladin or al Qaeda, 5 mentioned hijacking as a capability al Qaeda was training for or possessed. Two mentioned suicide operations, but not connected to a threat to aviation.<sup>436</sup> One of the summaries, which will be discussed later, mentioned air defense measures being undertaken in Genoa, Italy, for the G-8 summit to protect the event from possible air attack by terrorists (including their use of an explosives-laden aircraft as a weapon).<sup>437</sup>

The National Security Council's Counterterrorism Security Group (CSG) responded to the threat reporting that summer by inviting the FAA to attend a meeting in early July 2001 at the White House to discuss with domestic agency officials heightened security concerns.<sup>438</sup> General Michael Canavan, the FAA's top security official, attended the meeting.

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He recalled that the White House counterterrorism officials emphasized that an attack would likely take place overseas.<sup>439</sup> Other FAA officials questioned by the Commission, including Administrator Garvey, told us that leading up to 9/11 they too understood the threat to be primarily abroad.<sup>440</sup>

Canavan testified to the Commission, "We really had no credible or actionable intelligence that told us this was really going to happen. In other words, this is a real threat. [REDACTED]

[REDACTED] None of it was ever talked about being in the United States."<sup>441</sup>

In the course of our investigation FAA intelligence officials stated that such specific intelligence is rare in the counterterrorism environment. Nevertheless, because the intelligence that summer did not provide details about a specific plot, the security directives issued by the FAA that summer required no significant upgrade of security at domestic checkpoints, such as prohibiting knives or requiring Computer Assisted Passenger Prescreening System (CAPPS) selectees to undergo additional screening of their person or carry-on bags. Nor did the FAA implement any additional measures, such as increasing the presence of air marshals or imposing the other high-security measures it took in the aftermath of the 9/11 attacks.<sup>442</sup>

The first security directives that went out after the early July CSG meeting were issued on July 27, 2001. One concerned special security procedures involving charter flights to or from Cuba, another extended measures in place for clearing law enforcement officers' identification before they would be allowed to access sterile areas in airports.<sup>443</sup> [REDACTED]

Before 9/11, two other security directives went out, one in late August adding a few more names to the no-fly list, [REDACTED]

[REDACTED] None of these affected general security procedures at checkpoints or aboard aircraft.<sup>444</sup>

In 2001, the FAA issued 16 information circulars. These publications were designed to warn airports and air carriers about security issues but did not specify or require any security measures they should take.

The first circular sent out after the July CSG meeting appeared on July 12. It updated [REDACTED] the threat posed by surface-to-air missiles. Six more circulars were distributed before 9/11, five of them highlighting overseas concerns. Among them was a circular issued on July 31 that mentioned hijacking. It alerted the aviation community to "reports of possible near-term terrorist operations . . . particularly on the Arabian Peninsula and/or Israel" and contained the following language:

[REDACTED]

Administrator Garvey told the Commission that she was aware of the heightened threat during the summer of 2001. However, both FAA Deputy Administrator Monte Belger and his assistant told us in separate interviews that they were basically unaware of the threat posed by Usama Bin Ladin and al Qaeda prior to September 11, 2001.<sup>446</sup>

While the airlines had been instructed by the FAA to "demonstrate a high degree of alertness," neither of the senior operations executives of the airlines whose planes were hijacked on 9/11 were aware of the heightened threat environment that summer.<sup>447</sup>

The Commission was contacted by veteran commercial pilots who said that they were never made aware of the threat conditions that summer, and that they believe they should have been.

**Sabotage.** As stated by Administrator Garvey, prior to 9/11 the FAA viewed sabotage as the preeminent threat to civil aviation, particularly on the domestic front. The 1980s had seen a tremendous growth in the number of casualties from aircraft sabotage, including the 1985 bombing of an Air India flight that killed 329 people, the 1987 bombing of a Korean Air flight that killed 115 people, and the 1988 bombing of Pan Am 103 that killed 270 people.<sup>448</sup>

Throughout the 1990s, terrorist activities and other factors reinforced the FAA's view, including the foiled 1995 plot to blow up 12 U.S. jetliners over the Pacific, devised by Ramzi Yousef, mastermind of the 1993 attack on the World Trade Center; the TWA 800 disaster in 1996 (which was at first thought to be an act of sabotage but was later judged by federal investigators to be a fuel tank explosion caused by an electrical short circuit); and terrorist innovations in building improvised explosive devices (IEDs).<sup>449</sup>

In reaction to the TWA 800 disaster, President Clinton created the White House Commission on Aviation Safety and Security, chaired by Vice President Al Gore and commonly referred to as the Gore Commission. Its most significant security recommendations, issued in February 1997, dealt with the bomb threat to aircraft including the deployment of explosive detection systems at the nation's airports.<sup>450</sup>

FAA planning documents in effect on 9/11 listed the array of threats to civil aviation perceived by the agency and the measures to counter them. They also reflected the FAA's concern about sabotage.

[REDACTED]

The documents did not list suicide hijacking as a threat.

Civil aviation security officials focused on bombing in part because they believed measures to counter it were not nearly as pervasive or advanced as those in place to foil hijackings, which included checkpoint screening with metal detectors and X-ray machines. For this reason, the effort to deploy explosives detection technology to screen checked baggage became a priority for the FAA following the Pan Am 103 disaster in 1988.

Moreover, the absence of hijackings was cited by a number of FAA and air carrier security officials as evidence that checkpoint screening was working effectively to stop hijacking and that sabotage was the greater threat.<sup>452</sup> One former high-ranking Department of Transportation security official told us that in his view, the lack of incidents suggested that the nation had won the battle against hijacking.<sup>453</sup> The security director for a major air carrier told us that the approach to checkpoint security was "if it ain't broke, don't fix it."<sup>454</sup>

Because sabotage was considered deadlier than hijacking it was viewed as the greater menace—particularly considering that traditional hijackers wanted either transportation—such as the hijackings to Cuba in the late 1960s and early 1970s—or political concessions.

**Hijacking.** Despite the system's view of the relative threat posed by hijacking and sabotage, statistics showed that hijacking had always been the most prevalent means of attacking civil aviation. According to the Rand-St. Andrews University chronology of terrorist attacks, between 1972 and 1996 hijacking represented 87 percent of attacks against civil aviation.<sup>455</sup> Between 1996 and 2000 there were 64 hijackings worldwide but only 3 incidents of sabotage. Between 1996 and 2001, 15 hijackings took place. No cases of sabotage occurred. As of 2000, the incidence of hijacking was on the increase worldwide.<sup>456</sup>

And while sabotage had been the deadlier form of attack, hijackings had also often proved fatal. The 1985 hijacking of an Egypt Air flight killed 60 people and injured 35; the 1986 hijacking of Pan Am 73 killed 22 people and injured 125; and the 1996 hijacking of an Ethiopian Airlines flight killed 123 people.<sup>457</sup>

As noted previously, the FAA intelligence unit did perceive that the hijacking threat was on the rise prior to 9/11, but primarily as an overseas concern. Nevertheless, in a July 17, 2001, proposed rulemaking, the FAA expressly cited the presence of terrorist cells in the United States and their interest in targeting the transportation sector.<sup>458</sup>

We asked the top security official at the Department of Transportation on 9/11 why policymakers continued to view the risk of hijacking to be overseas, when the FAA's own public documents cited an urgent and growing domestic threat. He said that in hindsight he had asked himself that same question many times.<sup>459</sup>

A synopsis of the FAA's view of the hijacking threat was set forth in an advisory issued to air carriers and airports on April 27, 2000, four months after five Islamist extremists hijacked Indian Airlines Flight 814 to Kandahar, Afghanistan, to win the release of incarcerated fellow extremists. The circular stated:

*Redacted*

The expiration date on the advisory was "indefinite," and it had not been replaced as of September 11, 2001.

However, the FAA's security briefings to airports in the spring of 2001 contained an important caveat. It stated that from the hijackers' perspective, "A domestic hijacking would likely result in a greater number of American hostages but would be operationally more difficult. We don't rule it out. . . . If, however, the intent of the hijacker is not to exchange hostages for prisoners, but to commit suicide in a spectacular explosion, a domestic hijacking would probably be preferable."<sup>461</sup>

## 2.2 THE CIVIL AVIATION SECURITY LAYERS

**Purpose of the Aviation Security System.** Federal law required the FAA to protect U.S. civil aviation from piracy and sabotage. An FAA report produced in June 2001 stated the agency's mission more specifically: "The objective of the civil aviation security system is to prevent terrorist acts against civil aviation. The security system necessary to protect the traveling public must be capable of detecting, assessing, and ensuring that threat objects such as explosives, weapons, or chemical or biological agents are not allowed on aircraft."<sup>462</sup>



**Policy Setting and Implementation.** As the United States responded to attacks on commercial aviation, particularly the rash of hijackings in the 1970s, and high-profile disasters such as Pan Am 103, the roles and responsibilities for planning, implementing, and enforcing the nation's aviation security system took shape, and were vested in five primary institutions:

1. The Federal Aviation Administration was responsible for setting and enforcing regulations "to protect passengers and property on an aircraft in air transportation ... against an act of criminal violence or aircraft piracy."<sup>463</sup>
2. Air carriers were responsible for screening passengers and baggage for weapons and prohibited items (explosives and incendiary devices), controlling access to aircraft, and training air crews in emergency response.<sup>464</sup>
3. Airport authorities were responsible for controlling access to sensitive airport facilities, including the Air Operation Area (AOA), and providing law enforcement services to airport facilities.
4. U.S. intelligence agencies were responsible for collecting and sharing with the FAA intelligence information bearing on threats to aviation, and, together with law enforcement, for stopping such plots from being carried out.
5. Congress was responsible for enacting aviation security statutes, performing oversight of the national civil aviation system, and funding the FAA.

Together, the institutions of civil aviation security were responsible for protecting 1.8 million passengers daily as they traveled aboard more than 25,000 flights, leaving from and arriving at more than 563 domestic airports.<sup>465</sup>

**Layered System.** The basic approach to achieving civil aviation security before 9/11 was described by the President's Commission on Aviation Security and Terrorism in its May 1990 report. This document summarized the FAA's security approach as a system of redundant, interrelated security measures based on the theory that if one measure fails, another will back it up.<sup>466</sup> Civil aviation security authorities repeatedly emphasized the importance of a layered system of protection for airline passengers, aircraft, and facilities. Such a system afforded protection that no single layer of security could have provided independently.<sup>467</sup>

FAA security inspections, Department of Transportation Inspector General audits, and General Accounting Office investigations found persistent deficiencies in all areas of aviation security. This was powerful evidence that no single layer of security could be relied on to sufficiently protect passengers and aircraft from piracy and sabotage.

On the morning of September 11, 2001, national civil aviation security consisted of six major layers of defense. They were

- intelligence
- airport access control
- passenger prescreening
- passenger checkpoint screening

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- checked baggage/cargo/mail screening for explosives
- aircraft and onboard security

Only those layers relevant to the 9/11 plot—intelligence, passenger prescreening, passenger checkpoint screening, and onboard security—are addressed in the following staff analysis.

### Intelligence

Intelligence was considered to be the first layer of security—the linchpin of the U.S. civil aviation security system. The FAA relied on intelligence to identify specific plots against civil aviation so that the U.S. intelligence community or law enforcement could foil them before the terrorists got to the airport.

Intelligence and other information helped shape the agency's view of the terrorist threat to civil aviation, and was to inform the policies, practices and procedures necessary to protect passengers and commercial flights from hijacking and sabotage.

Without strong intelligence function that was well connected to policymakers, the task of designing and operating a rational and effective security system would be difficult.

Although it did not collect raw intelligence, the FAA maintained an intelligence unit that operated a 24-hour watch where data was assessed by trained analysts. The FAA was the agency primarily responsible for assessing intelligence for its relevance specifically to U.S. commercial aviation.<sup>468</sup> The unit received [REDACTED] threat related information daily from U.S. intelligence agencies, particularly the FBI, CIA, and State Department,<sup>469</sup> as well as other sources of information bearing on civil aviation security, including academia and the media.<sup>470</sup>

[REDACTED]  
[REDACTED]  
[REDACTED]<sup>471</sup> While the intelligence unit had no investigative powers, if certain information required particular investigative follow-up, FAA analysts would request the FBI or CIA to conduct further inquiry.

Important intelligence information derived from these cases would be included in daily intelligence summaries and other finished intelligence products and assessments bearing on civil aviation security.<sup>472</sup> The distribution of the daily intelligence summary to the FAA's top policymakers was one of the primary means the intelligence unit endeavored to keep leadership properly informed.<sup>473</sup>

If the information provided specific information about a threat to a particular flight or airport, the FAA's intelligence unit would notify the affected air carrier or airport directly.<sup>474</sup> If, however, the threat required the implementation of some extraordinary security measure, FAA's top security official—the associate administrator of civil aviation security—was empowered to order action through the issuance of a security

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directive.<sup>475</sup> The directive would specify what measure was required, who was required to implement it, when it was to be implemented and over what time period.<sup>476</sup>

To ensure that security measures were properly calibrated to the threat, the FAA relied, in part, on its "Security Directive Working Group." This panel was made up of representatives from the three main divisions of FAA Civil Aviation Security—intelligence, operations, and policy. The group would convene to assess the adequacy of operations in regard to a particular threat and was authorized to make recommendations to the FAA associate administrator about whether to order the enhancement of security measures. The Commission requested documentation regarding any working group meetings held in 2001 regarding the high threat period that summer, but TSA was unable to find such documentation.

In addition to issuing security directives FAA could invoke various alert levels as part of its "Aviation Security Contingency Plan." The plan outlined specific threat levels and the accompanying required countermeasures "to ensure that the FAA, airport operators, and air carriers are able to respond on short notice to all civil aviation threats." The various alert levels represented the level of threat perceived by the FAA in light of incidents and intelligence estimates.<sup>477</sup>

Although the FAA's Office of Intelligence had a highly capable staff, it was not well connected to the agency's top policymakers. Intelligence that indicated a real and growing threat leading up to 9/11 did not stimulate significant increases in security procedures. FAA policymakers required either a security incident or "specific and credible" evidence of an "actionable" threat before they would take urgent action to strengthen security.<sup>478</sup> This was despite the fact that such intelligence was recognized as being rare in the counterterrorism environment.

Since 9/11 public commentators and some Commission witnesses and interviewees cited the intelligence community's failure to connect the dots regarding the 9/11 attacks. We examined what the FAA knew about the following:

- the domestic presence and activities of international terrorists groups;
- the interest of Usama Bin Ladin and al Qaeda in hijacking;
- terrorists training as pilots for terrorist purposes; and
- the interest of terrorist groups in the use of aircraft as weapons.

**Domestic Presence of International Terrorist Groups.** FAA records indicate that the agency did understand that terrorists were present in the United States and posed a threat to commercial aviation.<sup>479</sup> In 1998, the FAA issued a security directive that read in part:

REDACTED

REDACTED

In addition, a July 17, 2001, *Federal Register* notice from the FAA stated:

Terrorism can occur anytime, anywhere in the United States. Members of foreign terrorist groups, representatives from State sponsors of terrorism and radical fundamentalist elements from many nations are present in the United States. . . Thus an increasing threat to civil aviation from both foreign and potentially domestic ones exists and needs to be prevented and countered.

This language was in support of a proposed rule to improve passenger screening and other security measures that Congress ordered in 1996. According to FAA officials, it had been held up by the Office of Management and Budget because of concerns over costs, and was still not in effect as of 9/11.<sup>482</sup>

FAA officials told us that what information they did receive about the presence and activities of foreign terrorist groups in the United States was general and anecdotal. They said they received little from the intelligence community regarding specific plots or the activities and capabilities of these groups.<sup>483</sup> One senior FAA official told us that FAA was being told that those terrorists who were present in the United States were engaged in "fund-raising rather than actual terrorist people plotting."<sup>484</sup>

REDACTED



In addition, FAA intelligence officials told us that they had perceived weaknesses in domestic reporting. There were several reasons for these flaws. First, although the FBI was the lead government agency on counterterrorism issues, its primary focus was on collecting evidence for criminal cases, not on the collection and dissemination of intelligence. The CIA, meanwhile, was focused on the terrorist threat overseas.

[REDACTED]

Second, there were indications of strain between some members of the intelligence community. One top FAA security official informed us that his refrain to the intelligence community prior to 9/11 was "You guys can tell us what's happening on a street in Kabul, but you can't tell us what's going on in Atlanta."<sup>488</sup> The former head of the FAA's Civil Aviation Security branch told us that he when asked counterparts in the intelligence community if the FAA could receive higher levels of information, his requests were not greeted warmly by some. In his interview with us, he characterized their attitude toward the FAA as "condescending."<sup>489</sup>

Third, FAA officials stated that even when useful information on domestic activities was developed by the intelligence community it was not always shared with them. As an example, these officials cited the failure to apprise the FAA of the "Phoenix EC" memo written in the summer of 2001 by an FBI special agent regarding his concerns about flight training being undertaken by Middle Eastern men at U.S. flight schools.<sup>490</sup> One high-ranking official at the FAA testified that had this memo been received by the FAA, an intelligence case file would have been opened specifically on pilot training, and appropriate investigative and collection follow-up would have been requested.<sup>491</sup>

Moreover, this intelligence might have put the information the FAA later received about the arrest of Zacarias Moussaoui into sharper focus. Moussaoui was arrested by the Immigration and Naturalization Service in August 2001 following reports of suspicious behavior in flight school.

But FAA intelligence officials were not the only ones who did not know about the Phoenix EC memo. The FBI's civil aviation program manager and the FAA's liaison to the FBI were also kept in the dark.<sup>492</sup> Nor were they aware that in 1998 the FBI tasked its field offices to examine whether Islamist extremists in their area were taking flying lessons.<sup>493</sup>

There are several explanations for this apparent breakdown in communications. The Civil Aviation Security program at FBI headquarters was handled by a single FBI employee who, until 1998, served in this capacity on a part-time basis.<sup>494</sup> We found no formal process for ensuring that the manager received all information pertinent to aviation security threats. Her access depended on her personal relationships with field agents responsible for the airports. A former head of the Air Transport Association told the Commission that the air carriers had long advocated the establishment of a civil aviation security unit within FBI headquarters. The absence of one, he said, was "the single greatest failure prior to 9/11."<sup>495</sup>

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The FAA employee who was assigned to the FBI reported that, in fact, he served as a "detailee" to the FBI, not as a "liaison."<sup>496</sup> As a detailee he spent nearly 40 percent of his time working on FBI assignments, including the investigation of the 1998 bombings of two U.S. embassies in Africa. In theory, his assignment to the Radical Fundamentalist Unit at FBI placed him in a unit where he could receive timely and important terrorist information that could benefit the FAA. However, he was responsible for many tasks, and the dual responsibilities imposed on him by two masters made it impossible for him to devote his full attention to civil aviation security issues.

REDACTED

REDACTED

One FAA official told us that in 2000, the Defense Intelligence Agency hosted a conference at which analysts, including representatives from the FAA, discussed cases in which hijackers possessed advanced knowledge of aircraft and piloting skills. [REDACTED]

REDACTED

We found no documentation to indicate that the FAA was aware that FBI headquarters had tasked field offices to review whether Islamist extremists were training in aviation schools in the late 1990s. We also found no evidence that the FAA asked the FBI to canvass flight-training facilities for terrorists.<sup>511</sup>

REDACTED

Also in 1994, a private plane piloted by a suicidal youth crashed into the south lawn of the White House.<sup>514</sup> [REDACTED]

REDACTED

*Redacted*

As discussed earlier, in 2000 and 2001, FAA's intelligence branch produced a presentation for airports and air carriers throughout the country that mentioned the possibility of a domestic suicide hijacking but reassuringly added that no group currently seemed to be making such plans.<sup>528</sup> [REDACTED]



tactics because the Algerian terrorist group known as GIA, the Armed Islamic Group, and al Qaeda had all begun to use suicide attacks in the late 1990s. The FAA's head of civil aviation security on 9/11 told us that he always knew it was a possibility, but said he never saw specific threat information.<sup>529</sup>

In addition, both FAA and airline officials told us that their view of the suicide threat to aviation was influenced by a presentation at an aviation security conference in 1997 by a leading expert in suicide terrorism from the Middle East. He did not believe that these tactics would be used in aviation.<sup>530</sup>

Even though the FAA was working on efforts to deploy additional explosives detection technology at airports throughout the country, before 2001 the primary measure to combat sabotage was still the practice of positive passenger bag match (PPBM). PPBM required that the air carrier confirm a passenger had boarded the plane before loading his or her checked luggage. The assumption behind the practice was that the attacker was not suicidal, reflecting the FAA's view that suicide terrorism was not a priority threat. If it had been, PPBM would have been a very poor countermeasure.<sup>531</sup>

In summary, although suicide hijacking would be a consequential event, FAA considered it unlikely because it was unprecedented, there was no specific and credible evidence to suggest it would happen, and at least one top suicide terrorism expert dismissed it as a tactic terrorists would employ in the aviation arena.

If intelligence failed to detect a terrorist plot, passenger prescreening was the next layer of protection.

#### Passenger Prescreening

Passenger prescreening before 9/11 had two main components designed to help keep dangerous people and their weapons off commercial aircraft.

The first was the FAA list of individuals known to pose a threat to commercial aviation, referred to as the no-fly list. On the basis of information it received from the intelligence community, the FAA was authorized to issue directives requiring air carriers to prohibit listed individuals from boarding aircraft or, in designated cases, to ensure that the passenger received enhanced screening before boarding.<sup>532</sup>

To be listed in a security directive, an individual had to pose a [REDACTED] threat to aviation.

[REDACTED]

Only a very few individuals among the thousands listed as known or suspected terrorists by the U.S. government were placed on the FAA no-fly list or ordered to undergo extraordinary security procedures. As of September 11, the list of individuals whom FAA

sought to prohibit from flying comprised 12 people; it included subjects wanted in connection with the 1995 Manila air plot to blow up a dozen U.S. aircraft in the Pacific, among them Khalid Sheikh Mohammed, the mastermind behind the attacks of September 11, 2001. Another list contained the names of three individuals who were required to receive enhanced screening, including a physical search, before being allowed to board a commercial aircraft.<sup>534</sup>

We did not find any evidence of a concerted effort by the FAA to obtain the names of all suspected terrorists and to list them in order to prevent them from flying. Nor did we find evidence that the FAA was directed to make such an effort by the Department of Transportation or the White House, [REDACTED]

The former head of FAA Civil Aviation Security, Cathal "Irish" Flynn, testified that he did not know about the government's TIPOFF list of known and suspected terrorists until the Commission's hearings on the topic in January 2004.<sup>535</sup> [REDACTED]

[REDACTED] would have enabled the aviation system to positively identify individuals that should be prohibited from flying distinct from innocent people who share the same name.<sup>536</sup>

The FAA's intelligence chief told us that often the basis for the listing of an individual as a threat was classified and thus the name was not shared with uncleared people or organizations. Because of classification concerns, he stated, it was very difficult to get clearance from the intelligence community to release the information, absent a direct threat to aviation. Thus, if the FAA wanted to use all 60,000 names in TIPOFF, each would have to be individually cleared.<sup>537</sup>

Interviewees also told us that the intelligence community was reluctant to share names of known and suspected terrorists with air carriers, particularly foreign carriers that fly to the United States. [REDACTED]

Two of the 9/11 hijackers, Nawaf al Hazmi and Khalid al Mihdhar, had been placed on the TIPOFF terrorist watchlist in late August. Their names were not shared with the FAA and therefore were not included in the no-fly list on September 11, 2001.<sup>539</sup>

Such limited use of terrorist watchlists seems to have contravened the recommendations of the White House Commission on Aviation Safety and Security. In 1997, the Gore Commission recommended: "The FBI and CIA should develop a system that would allow important intelligence information on known or suspected terrorists to be used in passenger profiling without compromising the integrity of the intelligence."<sup>540</sup>

While the civil aviation security system did not use lists of known or suspected terrorists to keep suspect individuals from boarding commercial aircraft, the FAA did require the air carriers to systematically prescreen passengers to predict who might be a security risk. This was the second element of prescreening—a program to identify those passengers on each flight who, because they matched profile criteria developed by the FAA (not including race, creed, color, or national origin), might pose more than a “minimal threat” to aviation. Those who met the criteria, the “selectees,” were subject to additional security measures.<sup>541</sup>

In August 1996, the FAA began requiring air carriers to use a manual prescreening process to identify potential security threats. Under this program, the airline representative at the check-in counter assessed the passenger according to criteria established by the FAA. [REDACTED]

After considering these factors, the air carrier would determine whether the passenger should be selected to receive additional security measures.<sup>542</sup>

If a passenger was selected, his or her checked baggage tags and boarding pass were specially marked. The bags would be screened for explosives, or held off the plane until it was confirmed that the passenger had boarded. The passenger’s carry-on items would be subject to a hand search or opened and assessed using FAA-approved explosives detection equipment. Using this method, screeners were better able to detect dangerous and deadly items [REDACTED]

543

In October 1997, the FAA issued a security directive requiring air carriers to replace the manual passenger prescreening system with an automated one known as the Computer Assisted Passenger Prescreening System (CAPPS), which would automatically score each passenger’s security risk according to an algorithm of “factors” and “weights.”<sup>544</sup> FAA officials believed that automating the system would make the process fairer and more reliable than the manual system that depended on airline personnel.<sup>545</sup> One air carrier security official said that some customer service personnel would deliberately fail to “select” a passenger who met the criteria in order to avoid the hassle of imposing additional security measures.<sup>546</sup>

CAPPS, like the manual system that preceded it, assessed factors [REDACTED] and weighted them according to a computerized formula. The system also assigned selectee status to a random sampling of passengers on each flight in order to address concerns about discrimination and to keep terrorists from gaming the system by learning how to avoid selection. [REDACTED]

547

Under CAPPS, the air carrier was responsible for examining each selectee's checked baggage for explosives using an FAA-approved method, including screening with explosive detection equipment, screening with a trace detection system designed to identify the residue of explosives on the outside of the bag, examination by a bomb-sniffing dog, and physical search. Selectees were no longer required to undergo any additional screening of their person or carry-on baggage at the checkpoint.<sup>548</sup> Up to 7 percent of all passengers were designated as selectees by the CAPPS system in place on September 11, 2001.<sup>549</sup>

Automated profiling was an inexact science. It identified many individuals who posed no particular threat to aviation and operated without empirical evidence that it captured all of those who were. [REDACTED] the system [REDACTED] targeted only those who checked bags.<sup>550</sup> The limited consequences of "selection" reflected the FAA's view that nonsuicide bombing was the most substantial risk to domestic aircraft.

One architect of CAPPS told us that the reason selection did not entail additional scrutiny at the checkpoint was policymakers' fear that checkpoint screeners would devote too much attention to CAPPS selectees and would fail to thoroughly screen other passengers.<sup>551</sup>

According to the former head of the airlines' trade association, the decision not to screen a selected person's carry-on bags was questionable given the "abysmally" poor performance of screening and given the wide range of dangerous items that were undetectable by the screening equipment in use at the time.<sup>552</sup> And an FAA security official told us that many of her colleagues believed that abandoning carry-on hand searches had led to a decrease in security.<sup>553</sup>

As originally conceived, passenger prescreening was supposed to be far more robust. In a 1996 report, an FAA security advisory group recommended CAPPS and called on airlines to apply an "FAA-approved passive profile to all passengers enplaning at U.S. airports to identify selectees, whose persons and property (checked baggage and carry-on bags/items) will receive additional security scrutiny."<sup>554</sup>

In fact, under Aviation Security Alert Level [REDACTED] an effect on 9/11, screeners were supposed to physically search or screen, with an approved device, the carry-on property of CAPPS selectees, and "hand wand or pat down that person."<sup>555</sup> This practice was not required by the security directive implementing CAPPS and was not in evidence at either the Portland Jetport or Dulles Airport where surveillance video recorded the checkpoint screening of the hijackers.<sup>556</sup>

We believe that a number of factors were influential in scaling back the consequences of CAPPS selection, among them the desire to limit the purchase of expensive explosives



detection technology,<sup>557</sup> concerns about customer dissatisfaction with delays and "hassle,"<sup>558</sup> the need to avoid operational delays,<sup>559</sup> and the fear of potential discrimination or the appearance of it.<sup>560</sup> Issues of discrimination were central to the debate over passenger prescreening from its inception.<sup>561</sup> Applying secondary screening to the selectees' person and carry-on belongings was particularly controversial. One senior FAA security official said that the "procedure of escorting selectees and dumping out their carry-on at the gate" generated opposition from the American Civil Liberties Union and the Department of Justice.<sup>562</sup>

Even with the consequences of selection restricted to explosives screening or matching checked bags, the air carriers were under pressure from the FAA that threatened to undercut CAPPS' effectiveness. In a January 11, 1998, letter to United Air Lines, the FAA conditionally approved the air carrier's plan to implement the CAPPS system provided that the carrier ensured that

There will be no lines forming at your EDS [explosives detection system] machines and that in the rare cases where lines might form, the persons in those lines will be from sufficiently diverse racial, ethnic and national origin groups so as to minimize any possibility of problematic stigmatization. Once UA implements the CAPPS program, we plan to monitor UA's security operations, and any consumer complaints filed with DOT, to ensure that your assurances regarding the absence or passenger make-up of lines at EDS equipment are correct.<sup>563</sup>

One airline official told us that his company was informed that if at least three out of five people in a line of selectees awaiting screening were of the same ethnicity, its program would be deemed discriminatory.<sup>564</sup>

For a terrorist traveling lightly, or who had intentions other than to sabotage the flight using checked baggage, prescreening did not represent a layer of security that needed to be overcome.

On 9/11 10 of the 19 hijackers were selected for additional baggage screening: nine flew on Colgan or American Airlines and one on United. Two of them, Hani Hanjour and Mohamed Atta, were pilots. The Commission asked the Transportation Security Administration to independently score the hijackers using the CAPPS algorithm in effect on 9/11 to determine if the air carriers had properly prescreened the hijackers. The agency found that the algorithm had been applied correctly and the selection designations were appropriate.<sup>565</sup>

In any case, the selection process was not the primary problem with CAPPS. Those hijackers identified by the system as risks to the aircraft carried their weapons—knives, box cutters, Mace or pepper spray, and fake bombs—on their person or in their carry-on bags.<sup>566</sup> Had CAPPS required selectees to be subject to a secondary search of their person, carry-on bags, or both, perhaps screeners could have found and confiscated the prohibited items; perhaps an alert screener would have identified the component parts of

a fake bomb; perhaps the additional screening would have exposed a rattled hijacker; or perhaps any knives found by the screeners would have been confiscated as they used the "common sense" urged of them by FAA rules and the discretion provided them by the airline's checkpoint operations guide to prohibit menacing items.

### Checkpoint Screening for Weapons

The most obvious and vital element of aviation security was checkpoint screening for weapons. Federal rules required air carriers "to conduct screening . . . to prevent or deter the carriage aboard airplanes of any explosive, incendiary, or a deadly or dangerous weapon on or about each individual's person or accessible property, and the carriage of any explosive or incendiary in checked baggage."<sup>567</sup> The former associate administrator for civil aviation security, Irish Flynn, testified before the Commission that "checkpoint screening was the primary measure to prevent hijackings of aircraft."<sup>568</sup> More than half a billion passengers per year were screened by government-certified equipment operated and maintained according to FAA specifications.

In most instances, air carriers entered into contracts with private security companies to conduct screening operations.<sup>569</sup> The staffing levels, training requirements, testing, and supervision of checkpoint screening personnel were set out in FAA regulations and enforced by the agency's security operation unit. Requirements for screeners included 40 hours of instruction and on-the-job training, with recurrent training and assessments.

Screeners relied on metal detectors, X-ray machines, physical searches, and bomb detection technology. Metal detectors were calibrated to detect guns and large knives to prevent passengers from carrying such items beyond the checkpoint.<sup>570</sup> Prohibited items such as guns would be confiscated. Restricted items such as box cutters were not allowed in the cabin, but the passenger would be given the option of placing the article in his or her checked baggage for transport.

All firearms were prohibited from being carried past a checkpoint, except those in the possession of authorized law enforcement officers. Knives with blades 4 inches long or longer also were expressly barred.<sup>571</sup>

Neither FAA regulations nor the Air Carrier Standard Security Program specifically identified a three-and-one-half-inch knife that locks into place, such as those purchased by the 9/11 hijackers and like knives found at the crash site of Flight 93 in Pennsylvania, as "deadly or dangerous." However, federal rules advised screeners to use "common sense" in determining what would be allowed past a checkpoint.<sup>572</sup> The airlines' checkpoint operations guide—which the airlines developed in cooperation with the FAA to implement the agency's rules—explicitly permitted knives with blades less than 4 inches long.<sup>573</sup>

Knives with blades under 4 inches, such as Swiss Army Knives, scout knives, pocket utility knives, etc. may be allowed to enter the sterile areas. However some knives with blades under 4 inches could be considered by a reasonable person to

## Onboard Security

In 2001, the program had 33 air marshals, a small fraction of its strength in the 1970s. The decline began after the implementation of checkpoint screening. A senior aviation security official told us that by the mid-1990s, air marshals were assigned exclusively to high-risk international flights on the basis of the prevailing threat assessment.<sup>621</sup> The highest-ranking FAA security official on 9/11 told us that the FAA did not discuss the need for a stronger domestic air marshal program, because the threat was considered to be overseas; in support of that view, he cited the fact that there had been no domestic hijackings in many years.<sup>622</sup>

of reasons, therefore, the domestic air marshal program remained dormant. For a variety

Absent the presence of an armed and trained air marshal aboard, the crew was expected to respond to a hijacking in accordance with the FAA-approved tactics of the "Common Strategy."<sup>627</sup> This strategy, in which all flight crews were required to be trained, taught them to refrain from trying to overpower or negotiate with hijackers, to land the aircraft as soon as possible, to communicate with authorities, and to try delaying tactics.<sup>628</sup>

The strategy drew on previous experiences with domestic hijackings and aimed at getting passengers, crew, and hijackers safely landed. It offered no guidance for confronting a suicide hijacking.<sup>629</sup> One of the FAA officials most involved with the Common Strategy in the period leading up to 9/11 described it as an approach dating back to the early 1980s, developed in consultation with the industry and the FBI, and based on the historical record of hijackings. It was last updated in 1997.

The goal of the strategy was to "optimize actions taken by a flight crew to resolve hijackings peacefully" through systematic delay and, if necessary, accommodation of the hijackers. The FAA believed that the longer a hijacking persisted, the more likely it was to have a peaceful resolution. The strategy's fundamental assumptions were that hijackers issued negotiable demands, most often for asylum or the release of prisoners, and that "suicide wasn't in the game plan."<sup>630</sup> One aviation security commentator noted, "To the extent that the politically-motivated hijacking was even considered, it was lumped with all the others whose perpetrators had no suicidal intent, and thus could arguably be talked into a safe and non-lethal surrender, given enough time and aircrew patience."<sup>631</sup>

A frequently asked question about the 9/11 attacks is, How did the hijackers get into the cockpit? While FAA flight rules required the cockpit door to remain closed and locked at all times,<sup>632</sup> FAA regulations also required that the door be designed to facilitate the flight crew's entry and exit in the event of an emergency. Even if hardened cockpit doors had been installed, they would have been effective only with proper policy, management, and procedures to safeguard cockpit keys.<sup>633</sup> As of 9/11, one key opened the cockpits of all Boeing aircraft.

Moreover, a senior airline security executive pointed out that a hardened door would not have helped on 9/11, because the Common Strategy was to cooperate.<sup>634</sup> Indeed, the chairman of the Security Committee of the Air Line Pilots Association agreed. According to media accounts, when proposals were made in early 2001 to install reinforced cockpit doors, the chairman responded: "But even if you make a vault out of the door, if they have a noose around my flight attendant's neck, I'm going to open the door."<sup>635</sup>

The FAA acknowledged the possibility of suicide hijacking in its intelligence assessments. It understood that suicide was an increasingly common tactic among terrorists in the Middle East and that, historically, civil aviation was a favored target of terrorists. Nevertheless, the FAA-approved training for commercial flight crews contained no guidance on how to respond if hijackers were bent on suicide, resorted to violence on the aircraft, or attempted to unseat the flight crew from the cockpit. One air carrier's video presentation called on flight crew to "keep aggression out of the

cockpit."<sup>636</sup> However, the Commission staff could find no instructional material addressing how that could be accomplished.<sup>637</sup>

The same training video, produced in 1984, showed actors playing hijackers holding a short-bladed knife to the throat of a flight crew member. The video said "knives are always a threat and have been used by hijackers in the past."<sup>638</sup> Another air carrier's training material included a CBS news report about a knife-wielding hijacker addicted to aviation video games who broke into the cockpit so that he might fly the plane. The hijacker killed the pilot and seized the controls before he was subdued by the co-pilot. The training material stated, "While this proved to be successful in this incident, remember, the Common Strategy tells us not to attempt to overtake a hijacker."

Thus, prior to 9/11, onboard security was a security layer only in the most modest sense of the term—a particularly ineffective barrier to those whose violent intentions reflected the growing terrorist trend to maximize casualties, rather than follow the traditional model of hijacking for transport or barter.

Former FAA administrator Jane Garvey summarized the Common Strategy and its relation to the 9/11 attacks as follows:

The most powerful weapons that hijackers carried on 9/11 . . . was their knowledge that our aviation system's policy was to get the passengers on the ground safely and that meant negotiation, not confrontation. We can all share some blame in hindsight for not seeing the jeopardy of the policy. But it was developed and continued over decades as a policy that we knew from experience would save lives.<sup>639</sup>

#### A Layered System?

In addition to designating aviation security as a "national security issue," the Gore Commission in 1997 reiterated the importance of security layering. The panel stated that "aviation security should be a system of systems, layered, integrated and working together to produce the highest possible levels of protection."<sup>640</sup> The National Research Council, in a major study of aviation security, also strongly endorsed this principle.<sup>641</sup>

The concept of "layering" in the realm of aviation security is closely related to the principle of "redundancy" incorporated into aviation safety policy and regulation. The U.S. civil aviation system requires all critical flight systems to be backed up by redundant capabilities.<sup>642</sup> This policy aims at reducing the chances that failure at a single point could result in a catastrophic accident. Because the mathematical chances that two systems will fail simultaneously are far less than the probability that either of the systems will fail independently, redundancy is an effective risk management strategy. Indeed, civil aviation safety policies, designed to reduce the risk of catastrophic systems failure to one in a billion, are based partly on this principle.<sup>643</sup>



Achieving such a precise and ambitious mathematical goal is difficult in any discipline; it is even a greater challenge in the area of aviation security, where human factors, such as criminal imagination and screener performance, predominate.<sup>644</sup> Nevertheless, aviation experts have long agreed that effective layering in security, like redundancy in safety, can greatly reduce the likelihood of catastrophic failure. Realizing the potential benefits of a layered system, however, rests on two key factors.

First, the layers must be designed to guard against the right problems. For instance, a security checkpoint not designed to stop knives, and onboard security not designed to stop a suicide hijacker, may represent two layers of security, but they will not defeat a knife-wielding suicide hijacker.

Second, each layer must effectively address in its own right whatever it is designed to prevent. Two ineffectual layers operating in tandem may be little or no better than a single defense. Given the serious holes in aviation security demonstrated by the system's performance on 9/11 and discussed above, it is difficult to conceive of the defenses in place on that day as a "system of systems, layered, integrated and working together to produce the highest possible levels of protection."

As DOT Inspector General Kenneth Mead testified before the Commission:

I think that the system we had in place before September 11 had in fact undergone incremental improvements over the years . . . and I believe in fact it provided a deterrent value for certain types of threat. Overall, though, the model on which the system was based did not work very well, and there were significant weaknesses in the protections it provided, even for the types of threats the system was designed to prevent.<sup>645</sup>

### 2.3 THE STAGE IS SET

Throughout 2001, the senior leadership of the FAA was focused on congestion and delays within the system and the ever-present issue of safety, but they were not as focused on security.<sup>646</sup> The Administrator recalled that "every day in 2001 was like the day before Thanksgiving."<sup>647</sup> The Deputy Administrator told the Commission that not a day went by in the spring of 2000 through the summer of 2001 that system delays were not priorities for him and the Administrator.<sup>648</sup>

Heeding calls for improved service and increased capacity, Congress focused its legislative and oversight attention on measures to improve the capacity, efficiency, and customer service of the aviation system. Its efforts included passage of a "passenger bill of rights," mainly to ensure greater convenience and comfort for passengers. The air carriers' trade association chief pointed out that all the while, the Department of Transportation was rating the air carriers by their on-time arrival records which added pressure to the effort to process people with great speed.<sup>649</sup> At the same time, the air carriers were struggling to keep up with demand, provide better customer service, and improve their economic health.

## SUBJECT-TO-CLASSIFICATION REVIEW

The American public—the customers of the aviation industry and the constituents of members of Congress—were generally sanguine about commercial aviation safety and security in the period leading up to 9/11. In an ABC poll taken just after the 1999 EgyptAir crash off the East Coast of the United States, 58 percent of the respondents indicated their belief that flying was safer than driving; and in a Fox News/Opinion Dynamics survey conducted during the same period, 78 percent cited poor maintenance as “a greater threat to airline safety” than terrorism.<sup>650</sup>

On September 11, 2001:

- The no-fly lists updated by FAA security directives offered an opportunity to prevent potential hijackers from boarding civilian aircraft in or traveling to the United States. As of September 11, 2001, only 12 individuals were listed—and not any of the 9/11 hijackers, even though two of them (Khalid al Mihdhar and Nawaf al Hazmi) were already on the State Department's TIPOFF terrorist watchlist (which contained more than 60,000 names).
- Checkpoint screener performance and the detection rate of prohibited items at airport checkpoints were spotty, and these weaknesses were widely known.
- Deadly knives were permitted aboard aircraft despite FAA's recognition that this policy was a vulnerability.
- A wide range of deadly weapons were undetectable by the screening equipment using the sensitivity levels then employed at security checkpoints.
- Selectees of the passenger prescreening risk profiling system (CAPPS) were subject to a search of their checked bags for explosives but underwent no additional scrutiny of their person or carry-on baggage.
- The official aircrew protocol for hijacking was cooperation and accommodation.

Thus, on 9/11 the challenge for would-be hijackers of domestic flights of U.S. air carriers boiled down to grasping three easily understood points: avoid prior notice by the U.S. intelligence and law enforcement communities, carry items that could be used as weapons that were either permissible or not detectable by the screening systems in place, and understand the in-flight hijacking protocol.

While intelligence authorities perceived the continuing terrorist threat to civil aviation, on September 10, 2001, the view of policymakers, air carriers, and the public contemplating civil aviation security was that there had not been a hijacking or bombing of a U.S. air carrier in many years and that aviation security measures were apparently gaining ground against the terrorists.<sup>651</sup>

In fact, the system was broken.

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<sup>1</sup> Colgan Air is a US Airways Express carrier providing regional service to east coast destinations. US Airways and American Airlines had an agreement that allowed passengers to make reservations for both airlines in the same booking.

<sup>2</sup> FBI report, “The Final 24 Hours,” Dec. 8, 2003.

## **Exhibit 23**

[washingtonpost.com](http://washingtonpost.com)

## Report Says FAA Got 52 Warnings Before 9/11

Associated Press  
Friday, February 11, 2005; Page A02

The Federal Aviation Administration received repeated warnings in the months before Sept. 11, 2001, that al Qaeda hoped to attack airlines, according to a previously undisclosed report by the commission that investigated the terrorist attacks.

The report detailed 52 such warnings to FAA leaders between April 1 and Sept. 10, 2001, about the terrorist organization and its leader, Osama bin Laden.

The commission report, written last August, said five security warnings mentioned al Qaeda's training for hijackings and two reports concerned suicide operations not connected to aviation. None of the warnings specified what would happen on Sept. 11.

FAA spokeswoman Laura Brown said the agency received intelligence from other agencies, which it passed on to airlines and airports. But "we had no specific information about means or methods that would have enabled us to tailor any countermeasures," she said.

Brown also said the FAA was in the process of tightening security at the time of the attacks. "We were spending \$100 million a year to deploy explosive-detection equipment at the airports," she said. The agency was also close to issuing a regulation that would have set higher standards for screeners and given it direct control over the screening workforce.

Many similar problems with aviation security were detailed in the Sept. 11 report released last summer. Al Felzenberg, former spokesman for the commission, said the government only recently completed a declassification review of the 120 pages of additional material, parts of which have been redacted.

The unclassified version, which was reported by the New York Times, was made available by the National Archives yesterday.

According to the report:

- Aviation officials were "lulled into a false sense of security" and "intelligence that indicated a real and growing threat leading up to 9/11 did not stimulate significant increases in security procedures."

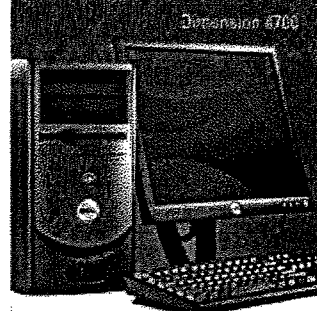
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- Of the FAA's 105 daily intelligence summaries between April 1 and Sept. 10, 2001, 52 mentioned bin Laden, al Qaeda or both, "mostly in regard to overseas threats."
- The FAA did not expand the use of air marshals or tighten airport screening for weapons. It said FAA officials were more concerned with reducing airline congestion, lessening delays and easing air carriers' financial problems than thwarting a terrorist attack.

Information in this report was available to members of the Sept. 11 commission when they issued their public report last summer. That report also criticized FAA operations.

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**Petition for Reconsideration  
to STB**

**Exhibit 3**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA**

CSX TRANSPORTATION, INC.,

Plaintiff,

v.

ANTHONY A. WILLIAMS *et al.*,

Defendants

SIERRA CLUB

Defendant-Intervenor.

Civil Action No. 1:05CV00338 (EGS)

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**DECLARATION OF THEODORE S. GLICKMAN**

I, Theodore S. Glickman, do hereby declare:

1. The following is based on personal knowledge.
2. I am a Professor at George Washington University in Washington DC, in the Department of Management Science, specializing in transportation and logistics, risk assessment and risk management, hazardous materials safety and transportation, and homeland security. A copy of my C.V. is attached with this declaration.
3. I have performed extensive research regarding risk assessment, hazardous materials safety, and routing of hazardous rail shipments for over twenty-five years. I have published over 40 articles on these topics and related subjects, in publications such as *Journal of Hazardous Materials*, *Transportation Science*, *Accident Analysis and Prevention*, *Transportation Research Record*, *Management Science*, and *Operational Research Quarterly*.

4. I wrote an article entitled "Rerouting Railroad Shipments of Hazardous Materials to Avoid Populated Areas," published in *Accident Analysis and Prevention* in 1983, one of the earliest and most widely-cited articles published on the topic of rerouting hazardous materials shipments.

5. I have extensively analyzed the risks of transporting hazardous materials in tank cars while consulting for the Association of American Railroads. I performed analysis of this issue and of routing of rail shipments for approximately five years (from 1978-1982) as a Project Manager at the United States Department of Transportation's Volpe National Transportation Systems Center in Cambridge Massachusetts.

6. I designed the PC\*HazRoute software package produced by ALK Associates of Princeton, a well-known transportation consulting firm, which has been used to compare the distances and population exposures and risks between alternative train routes.

7. I testified before the DC Council on November 22, 2004 regarding issues relating to the risks of rail transport of hazardous materials in the District of Columbia and the considerations related to rerouting of those hazardous materials.

8. I have reviewed the Memorandum of Points and Authorities filed by CSX Transportation, Inc. (CSXT) in support of the Motion for Preliminary Injunction it filed in this Court in February 2005 seeking to overturn the DC Terrorism Prevention in Hazardous Materials Transportation Act of 2005. I have also reviewed the Declaration of John Gibson, Jr. that CSXT filed with that Motion.

## **Terrorism Security Benefits of Rerouting Hazardous Materials Around Washington, DC**

9. CSXT has stated that “detouring hazardous shipments around the District would not produce any system-wide improvement in safety or security.” CSXT Memorandum of Points and Authorities in Support of Motion for Preliminary Injunction, at 19. In my opinion this statement is incorrect. It is not supported by any information produced by CSXT in the documents that I have reviewed.

10. As I testified before the DC Council on November 22, 2004, rerouting tank cars containing very hazardous materials around Washington DC would result in a substantial reduction in the number of people who would be exposed to the deadly impact of a release due to a train accident or deliberate attack.

11. The principal cost of rerouting tank cars is the increase in the length of haul for all the affected freight cars, plus when necessary, the expense of changing associated operations. CSXT claims that the DC Terrorism Prevention Act creates terrorism risks elsewhere but, as discussed below, it offers no evidence of any terrorist threat along the alternative routes, and there is no data I am aware of that shows such a threat.

12. CSXT indicates that a decision on rerouting should be based on a “comprehensive, risk-based approach.” CSXT Memorandum of Points and Authorities in Support of Motion for Preliminary Injunction, at 30. But neither the security benefits of the DC Terrorism Prevention Act or the additional costs and/or risks that could be caused have been carefully analyzed in CSXT’s Memorandum of Points and Authorities or in Mr. Gibson’s declaration.

13. CSXT simply suggests without support that whatever security is gained in the District will be lost in the locations to which hazardous materials are rerouted. This assumption

is inconsistent with the obvious differences in terrorism faced by the District and the locations on the alternative routes. The DC Terrorism Prevention Act focuses on risk of a terrorist attack, not on the operating risks described in CSXT's arguments.

14. Washington DC's high concentration of government buildings and national political monuments and tourist attractions, coupled with its high population density (and higher potential fatalities from an attack) make it a much more likely target of a terrorist attack than any of the locations on the alternative routes that I have reviewed in the attached maps. (See paragraphs 28-32 below). Thus, the Act would substantially reduce terrorist risk in the aggregate, not merely shift that risk as CSXT says.

15. Nor is there any support for CSXT's statement that increased "dwell time" in rail yards located far from densely-populated terrorist targets will materially increase the probability of an attack in those areas to the level currently existing in the District. Based on my experience and knowledge, this statement is wrong.

16. In assessing the level of security in the Capitol area, it is important to consider that many of those who reside or work in Washington DC may be more vulnerable than those federal workers who to some degree are protected by U.S. government security facilities and procedures.

17. There is an important distinction between (a) railroad operational risks, i.e., the risk of accidents on rail lines, yards, and sidings and (b) railroad terrorism security risks. Operational risks have for many years been extensively addressed by regulations promulgated by federal agencies, but it is only in the last few years that such agencies have begun to address terrorism security risks. CSXT's arguments focus on the operational risks, i.e., safety concerns, that have long been regulated. CSXT's arguments regarding railroads' safety record, the need



for uniform regulations nationwide, and the adequacy of federal regulations all pertain to traditional regulation of operational risks and not terrorism risks. These arguments do not apply to post-September 11 homeland security concerns and the need to provide the most protection in the highest-threat locations.

18. To the extent CSXT or the parties supporting it are claiming that rerouting will result in increased accident risks that will offset the security benefits that the DC Act creates in preventing terrorism, such a claim is not substantiated by the process of risk assessment.

19. The likelihood of a hazardous materials release in a rail accident (i.e., the “inherent risk” as described by CSXT) is not high. For example, statistics show that there was one accidental release for every 48,000 cars shipped in the year 2000.

20. Even if one were to increase the length of a route, or the dwell time, or the number of interchanges, it is not conceivable that such changes in operational risks due to rerouting could raise the level of concern about accident risk to the level associated with terrorist attacks on tank cars containing extremely hazardous materials in one of the two highest threat terrorist targets in the United States.

21. Risk is a function not only of probability but also of consequences. Neither CSXT’s Memorandum of Points and Authorities nor Mr. Gibson’s declaration analyze the difference between the consequences of a hazardous materials release in the District and a similar release on one of CSX’s alternative routes. Because the feasible alternative routes I reference below all avoid dense urban areas, the number of deaths and injuries likely to result from a chlorine release at any location on such a route would likely be much lower than the 100,000 deaths that a recent study has indicated could result from a chlorine release in Washington DC. *See* Report by Jay Boris, United States Naval Research Institute, submitted to

DC Council, January 23, 2004, at 4-5. Similar differences in consequences of a release would exist for other hazardous materials. Likewise, the derailments that occur in yards are generally much less consequential than derailments on mainlines. Therefore, any increase in the time spent in yards when an alternative route is used is unlikely to contribute much additional risk.

22. Contrary to CSXT's assumption, shortest time routes are not necessarily the lowest risk routes. Moreover, emergency response may be more effective when an accident occurs than when a terrorist attack occurs because railroads and emergency responders are far better equipped to take measures to mitigate an accidental hazardous materials leak than the kind of sudden and instantaneous release likely to result from a terrorist bombing.

#### **The Costs of Rerouting Hazardous Materials**

23. Neither CSXT's Memorandum of Points and Authorities nor Mr. Gibson's declaration has quantified or otherwise systematically assessed either the changes in operating costs due to rerouting nor the impacts on operating safety. A number of CSXT's cost-related conclusions are inaccurate or unsupported. Moreover, virtually all of CSXT's assumed increase in operating costs results from the inaccurate claims about what constitutes the least-cost alternative route.

24. From a supply chain perspective, longer shipment times do not necessarily mean delivery delays; they may simply mean that orders need to be placed sooner to allow for longer lead times.

25. The cost of additional interchanges would be a small price to pay to reduce the risk of a terrorist attack.

26. As I testified before the DC Council on November 22, 2004, there are viable alternatives for rerouting hazardous material tank car traffic around Washington DC that would avoid locations with dense population concentrations.

27. The maps that I am attaching hereto as Exhibit 4 show alternative routes that CSXT ignores or asserts cannot be used -- and compare them to those that CSXT claims it would have to use. These maps identify alternative routes that CSXT could use to assure that ultrahazardous materials regulated by the DC Terrorism Prevention Act do not pass through the District when transporting materials from Mt Holly, NC to Claymont, DE or from Galmish, WV to Bayonne, NJ (as CSXT currently does by traversing the District).

28. All of these routes not only avoid passing through the sensitive area of the District; they also substantially reduce the population exposed to the regulated ultrahazardous materials.

29. Moreover, in November 1998, PC\*HazRoute showed that CSXT was using the two alternatives routes marked in green in these maps (including the Norfolk Southern line depicted in the first map) to transport far *more* of its freight respectively than it was then transporting on the North-South and East-West lines through the District, suggesting that these routes were feasible, and in many circumstance preferable, for transporting CSXT's freight to the routes through the District that CSXT is now presenting as the only acceptable routes for transporting the hazardous materials regulated by the DC Terrorism Prevention Act.

30. Not only would the total exposed population be lower on all of the alternative routes depicted in these maps than it would be on CSXT's current routes through the District. The risk that any portion of the exposed population would actually be subject to a hazardous incident materials release is likely to be lower as well. I do not believe that there are any

locations on these routes that have a risk of terrorist attacks that is comparable to that in Washington DC.

31. The availability of these alternative routes would allow CSXT to comply with the DC Terrorism Prevention Act without using the substantially longer alternative routes it has identified as the only feasible alternatives in its Memorandum of Points and Authorities.

I, Theodore S. Glickman, pursuant to 28 U.S.C. § 1746, do hereby declare under penalty of perjury that the foregoing is true and correct. Executed on March 14, 2005.

\_\_\_\_\_/s/\_\_\_\_\_  
Theodore S. Glickman



**THEODORE S. GLICKMAN**  
4706 Hunt Avenue  
Chevy Chase, MD 20815  
H (301) 718-6416 W (202) 994-4791  
glickman@gwu.edu

## **AREAS OF INTEREST**

Transportation and logistics  
Risk assessment and risk management  
Hazardous materials safety  
Homeland security

## **EDUCATION**

Ph.D. in Operations Research & Industrial Engineering, Johns Hopkins University, 1971  
B.S. in Physics, State University of New York at Stony Brook, 1965

## **EXPERIENCE**

### ***2002-Present***

The George Washington University

Associate Professor, Department of Management Science, School of Business

Graduate instructor in the MBA program, teaching operations management, statistics, and decision science.

### ***1995-2001***

KPMG LLP, Washington, D.C.

Managing Director, Economic Consulting Services

Conducted quantitative modeling and analysis studies for industrial and government clients, with applications to operations management, strategic planning, performance measurement, risk management, and decision support systems.

### ***1989-1994***

Resources for the Future, Washington, D.C.

Senior Fellow, Center for Risk Management

Performed research in public policy issues related to environmental hazards, natural disasters, major accidents and transportation safety. Consultant and expert witness in transportation, facility siting, and risk analysis.

### ***1987-1988***

The Johns Hopkins University, Baltimore, Maryland

Associate Dean, G.W.C. Whiting School of Engineering and Full Professor, Department of Geography & Environmental Engineering

Coordinated graduate engineering programs on the Homewood Campus and at the Applied Physics Laboratory. Helped establish the new campus in Montgomery County.

### ***1984-1986***

Virginia Polytechnic Institute & State University, Blacksburg, Virginia  
Director of Engineering Programs, Northern Virginia Graduate Center and  
Tenured Professor, Department of Industrial & Systems Engineering

Developed and coordinated graduate engineering programs, including contract programs with federal agencies and private corporations. Taught graduate courses in engineering management and operations research.

***1984-1994 Part-time***

Association of American Railroads, Washington, DC  
Consultant, Research and Test Department

Analyzed the risks of transporting hazardous materials in tank cars. Implemented a system for optimizing the distribution of freight cars nationwide and evaluated trends in rail safety.

***1972-1977 Full-time/1978-1980 Part-time***

Boston University, Boston, Massachusetts  
Associate Professor, Department of Quantitative Methods & Operations Management,  
with a joint appointment in the Department of Manufacturing Engineering.

Taught undergraduate and graduate students and supervised thesis research.

***1972-1977 Part-time/ 1978-1982 Full-time***

U.S. Department of Transportation, Cambridge, Massachusetts  
Project Manager, Transportation Policy, Volpe National Transportation Systems Center

Performed research in freight transportation, system safety (highway, airline, rail, marine, pipeline), vehicle routing and scheduling, and hazardous materials transportation.

***1970-1971***

The World Bank, Washington, D.C.  
Economist, Special Projects Department

Analyzed agricultural development and commodity distribution in Bangladesh.

**PROFESSIONAL SERVICE**

Program Chairman, *Conference on In-Place Protection During Chemical Emergencies*, for the U.S. Environmental Protection Agency and the Federal Emergency Management Agency (Emmitsburg, Maryland, 1988).

Technical Advisor, Transportation and Systems Panel, U.S. Nuclear Waste Technical Review Board (1989).

Expert Panel on Future Inadvertent Intrusion into the Waste Isolation Pilot Plant (WIPP) Repository, Sandia National Laboratories (1990).

Council Member, Transportation Science Section, Operations Research Society of America (elected for the 1990-1993 term).

Chair, Peer Review Panel, Amoco-EPA Pollution Prevention Project (1993).

Member, Study Committee for the Railroad Tank Car Design Process, Transportation Research Board, National Research Council (1993-1994).

Member, Peer Review Panel, Nevada Risk Assessment/Management Program, U.S. Department of Energy (1995-1998).

Chair, Industry Working Group, Global Disaster Information Network (2000).

Member, Board of Directors, Multi-Sector Crisis Management Consortium (current)

Testimony, D.C. City Council Committee Public Works and Environment Committee Public Roundtable on Rail Corridor Risk (2004)

Resident Scholar, GWU Homeland Security Policy Institute (2005)

## **RECOGNITION AND AWARDS**

Phi Beta Kappa

Beta Gamma Sigma

Outstanding Service Commendation - National Research Council

Thomas L. Saaty Prize in Applications of the Mathematical Sciences

## **JOURNAL REFEREEING**

Journal of Advanced Transportation

Journal of Hazardous Materials

Management Science

Operations Research

Transportation Research Record

Journal of Public Analysis & Management

Risk Analysis

Transportation Research

O.R. Letters

Transportation Science

Computers & Operations Research

## **SPONSORED RESEARCH**

Decision Support System for Empty Freight Car Management – Association of American Railroads (1985)

Using the News to Develop a Database on Major Accidents and Natural Disasters – National Science Foundation (1993)

Analysis of Environmental Justice in the Pittsburgh Metropolitan Area – Heinz Foundation (1992)

Campus Outsourcing Trends and Issues – GWU School of Business Research Experience for Undergraduates Grant (2004)

Government and Industry Standards for Emergency Management Procedures and Products – Department of Homeland Security/Homeland Security Institute (2004)

## **RECENT PRESENTATIONS AND PANEL DISCUSSIONS**

NSF Workshop on Cyber-Infrastructure and Homeland Security, La Jolla (2003)

EURO/INFORMS Joint International Meeting, Istanbul (2003)

INFORMS Annual Meeting, Atlanta (2003)

In Support of the Common Defense: U.S. Army War College Symposium, Carlisle, PA (2004)

20th Annual Faculty Research Forum of the Washington Consortium of Business Schools (2004)

Symposium on Integrating Intelligent Transportation Systems with Public Safety, Security and Emergency Management, Las Vegas (2004)

George Washington University Health Sciences Research Day (2005)

## **PH.D. COMMITTEES**

Amine Alameddine, Virginia Tech (1990)

Pooja Anand, University of Illinois at Urbana-Champaign (2005)

## **CONSULTING CLIENTS**

Air Products, Inc.

Association of American Railroads

Barilla Corporation

Central Intelligence Agency

Bell Atlantic

BellSouth

Chemical Manufacturers Association

Digital Equipment Corporation

Federal Aviation Administration

Fidelity Investments

Formosa Plastics Corporation

GTE

Laboratory Corporation of America

Los Alamos National Laboratory

New York University

Panoz Motorsports

Potomac Electric Power Company

Radio City Productions

U.S. Department of Energy

U.S. Department of Transportation

U.S. Environmental Protection Agency

XM Satellite Radio

## **PUBLICATIONS**

### **Books and Monographs**

*Readings in Risk*, with Michael Gough, The Johns Hopkins Press (1990).

*Acts of God and Acts of Man: Recent Trends in Natural Disasters and Major Industrial Accidents*, with Dominic Golding and Emily D. Silverman, Diane Publishing Company (1992).

*Evaluating Environmental Equity: The Impacts of Industrial Hazards on Selected Social Groups in Allegheny County, Pennsylvania*, with Robert Hersch, Resources for the Future (1995).

### Articles and Book Chapters

1. "Investment Planning for Irrigation Development Projects," with Stephen V. Allison, *Socio-Economic Planning Sciences*, 7, pp. 113-122 (1973).
2. "Heuristic Decision Policies for the Control of Reversible Traffic Links," *Transportation Science*, 7, pp. 362-376 (1973).
3. "On the Statistical Interdependence Between Order Quantity and Safety Stock," with Paul D. Berger, *Proceedings of Decision Sciences Northeast Regional Conference* (1973).
4. "Resource Allocation to Minimize Delay in a Dual-Purpose Service Facility," *Operational Research Quarterly*, 26, pp. 305-315 (1975).
5. "Optimal Price and Protection Period Decisions for a Product Under Warranty," with Paul D. Berger, *Management Science*, 22, pp. 1381-1390 (1976).
6. "Cost/Completion-Date Tradeoffs in the Transportation Problem," with Paul D. Berger, *Operations Research*, 25, pp. 163-168, (1977).
7. "Rerouting Railroad Shipments of Hazardous Materials to Avoid Populated Areas," *Accident Analysis and Prevention*, 15, pp. 329-335 (1983).
8. "Risk Analysis of Railroad Freight Transportation Disasters," with David I. Heimann, in *Mathematical Modeling in Science and Technology*, Pergamon Press (1984).
9. "Risks of Catastrophic Derailments Involving the Release of Hazardous Materials," with Donald B. Rosenfield, *Management Science (Special Issue on Risk Analysis)*, 30, pp. 503-511 (1984).
10. "Parametric Cost-Benefit Analysis Applied to Underwater Pipeline Safety," *Journal of Safety Research*, 15, pp. 91-96 (1984).
11. "Optimal Large-Scale Distribution of Pooled Empty Freight Cars Over Time, With Limited Substitution and Equitable Benefits," with Hanif D. Sherali, *Transportation Research*, 19B, pp. 85-94 (1985).
12. "Generating Hazardous Material Risk Profiles on Specific Railroad Routes," with Phani K. Raj, *Proceedings of the International Conference on Recent Advances in Hazardous Materials Transportation Research*, pp. 235-251 (1985).
13. "A Methodology for Estimating Time-of-Day Variations in the Size of a Population Exposed to Risk," *Risk Analysis*, 6, pp. 317-324 (1986).
14. "Computing Risk Profiles for Composite Low-Probability, High-Consequence Events," with David I. Heimann, *Annals of Operations Research*, 9, pp. 545-560 (1987).
15. "Benchmark Estimates of Release Accident Rates in Hazardous Materials Transportation by Rail and Truck," *Transportation Research Record*, 1193, pp. 22-28 (1989).

16. "A Case Study of the Social Cost of Current Transportation Policies for Hazardous Materials," with Molly K. Macauley, *NC State Economist* (November 1989).
17. "Deciding Between In-Place Protection and Evacuation in Toxic Vapor Cloud Emergencies," with Alyce M. Ujihara, *Journal of Hazardous Materials*, 23, pp. 57-72 (1990).
18. "Restricting Hazardous Materials Routes on the Nation's Railroads: Some Considerations for Regulatory Analysis," *Transportation Research Record*, 1264, pp. 69-76 (1990).
19. "Catastrophic Transportation Accidents and Hazardous Materials Routing Decisions," with Hanif D. Sherali, in *Probabilistic Safety Assessment and Management*, George Apostolakis (ed.), Elsevier Science Publishing Co., pp. 1187-1194 (1991).
20. "An Expeditious Risk Assessment of the Highway Transportation of Flammable Liquids in Bulk," *Transportation Science (Special Issue on Hazardous Materials)*, 25, pp. 115-123 (1991).
21. "Highway Robbery: The Social Costs of Hazardous Materials Incidents on the Capital Beltway," with Molly K. Macauley and Paul R. Portney, in *Hazardous Materials and Waste Transportation*, American Society of Civil Engineers (1991), and *Transportation Research Record*, 1313, pp. 27-32 (1991).
22. "A Benefit-Cost Analysis of Using Different Specification Tank Cars to Transport Environmentally Sensitive Chemicals," with Christopher P.L. Barkan, *Transportation Research Record* (1991).
23. "For a Few Dollars More: Public Trust and the Case for Transporting Nuclear Waste in Dedicated Trains," with Dominic Golding, *Policy Studies Review*, 10, pp. 127-138 (1992).
24. "A Comparison of Theoretical and Actual Consequences in Two Fatal Ammonia Incidents," with Phani K. Raj, in *Transportation of Dangerous Goods: Assessing the Risks*, F. Frank Saccomanno and Keith Cassidy (eds.), Institute for Risk Research, University of Waterloo (1993).
25. "The Perceived Risks of Transporting Hazardous Materials and Nuclear Waste: A Preliminary Analysis of Case Study Findings," with Alvin H. Mushkatel and K. David Pijawka, in *Transportation of Dangerous Goods: Assessing the Risks*, F. Frank Saccomanno and Keith Cassidy (eds.), Institute for Risk Research, University of Waterloo (1993).
26. "Environmental Equity and Industrial Chemical Accidents," with Dominic Golding, *Proceedings of the International Emergency Management and Engineering Conference - TIEMEC '94*, pp. 205-211 (1994).
27. "Biconvex Models and Algorithms for Risk Management Problems," with Hanif D. Sherali and Amine Alameddine, *American Journal of Mathematical and Management Sciences*, 14(3,4), pp. 197-228 (1994).
28. "GIS-Based Environmental Equity Analysis: A Case Study of TRI Facilities in the Pittsburgh Area," with Dominic Golding and Robert Hersh, in *Computer Supported Risk Management*, William A. Wallace and E.G. Beroggi (eds.), Kluwer Academic Publishers (1995).



29. "The Cost-Risk Tradeoffs Associated with Rerouting Highway Shipments of Hazardous Materials to Minimize Risk," with Mary Anne Sontag, *Risk Analysis*, 10(1), pp. 61-67 (1995).
30. "Evaluating Environmental Equity in Allegheny County," in *Community Risk Profiles: A Tool to Improve Environment and Community Health*, Iddo K. Wernick (ed.), The Rockefeller University (April 1995).
31. "What Price Safety? The Tradeoffs Associated with Responsible Routing of Tank Cars," with Erhan Erkut, *INFORMS Rail Applications Special Interest Group Newsletter*, 3(1), pp. 4-7 (1996).
32. "The Power and Pitfalls of Using GIS to Examine Environmental Justice," in *Geographical Information Systems in Environmental Resources Management*, Air and Waste Management Association (1996).
33. "Low Probability-High Consequence Considerations in Routing Hazardous Materials Shipments," with Hanif D. Sherali, Laura D. Brizendine, and Shivaram Subramanian, *Transportation Science*, 31(3), pp. 237-251 (1997).
34. "Minimax Population Exposure in Routing Highway Shipments of Hazardous Materials," with Erhan Erkut, *Transportation Research Record*, 1602, pp. 93-100 (1997).
35. "Modeling Considerations in the Analysis of Risk Management Strategies," in *Quantified Societal Risk and Policy Making*, R.E. Jorissen and P.J. Stallen (eds.), Kluwer Academic Publishers (1998).
36. "Hazardous Materials Transportation and Accidents," in *The Chapman & Hall Encyclopedia of Environmental Science*, D.E. Alexander and R.W. Fairbridge (eds.) (1999).
37. "Measuring Environmental Equity with Geographical Information Systems," in *The RFF Reader in Environmental and Resource Management*, Wallace E. Oates (ed.), Johns Hopkins Press (1999).
38. "Using Decision Analysis for Site Selection," in *The Location Strategies Workbook*, Reed Business Information Publishers (2003).
39. "Allocating Emergency Response Resources to Minimize Risk with Equity Considerations," with Hanif D. Sherali and Jitamitra Desai, *American Journal of Mathematical and Management Sciences* (forthcoming).
40. "Using Hazard Networks to Determine Risk Reduction Strategies," with Homayoun Khamooshi, *Journal of the Operational Research Society* (forthcoming).
41. "Rosiglitazone Inhibits Growth of MDA-MB-231 and T47D Cells in a Dose- and Time-Dependent Manner at Suprapharmacologic Doses," with Manali Mody, Nachiket Dharker, Fatah Kashanchi and Joseph J. Pinzone. *Proceedings of the 96th Annual Meeting of the American Association for Cancer Research* (forthcoming).
42. "The Cost and Risk Impacts of Rerouting Hazardous Railroad Shipments," with Erhan Erkut, *Transportation Research Part A: Policy and Practice* (under review).

43. "Security, Visibility, and Resiliency: The Keys to Mitigating Supply Chain Vulnerabilities," with Susan C. White, *International Journal of Logistics Systems and Management* (under review).
44. "Outsourcing on Campus: Trends and Issues," with Susan C. White, *Change: The Magazine of Higher Learning* (under review).

**Petition for Reconsideration  
to STB**

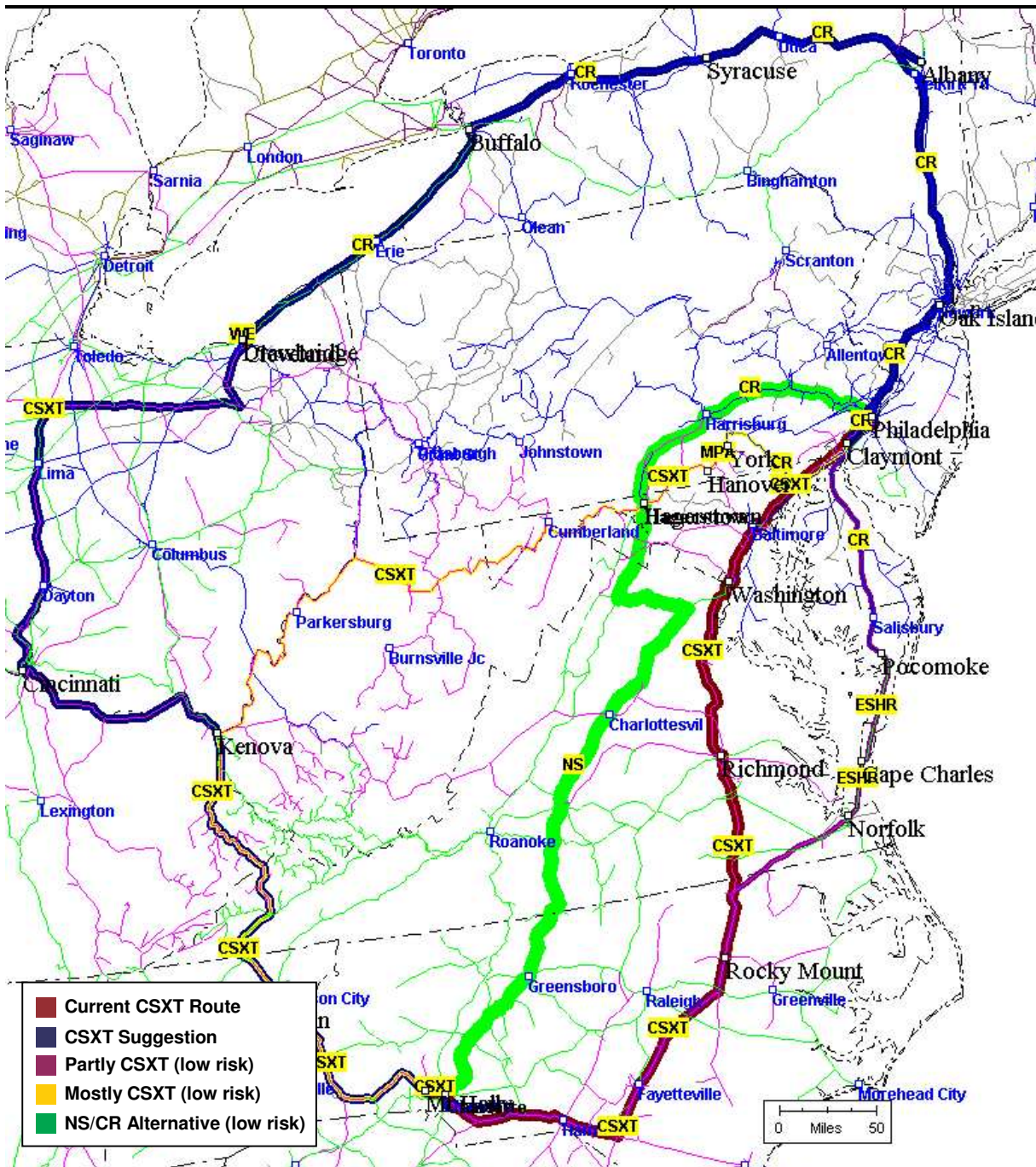
**Exhibit 4**

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## **PC\*HazRoute Maps of Alternative Routes**

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Alternative Routes to CSXT Existing and Proposed Routes for Mt Holly, NC -- Claymont, DE



**dark red line** = existing route used by CXST from Mt Holly, NC -- Claymont, DE (through Washington, DC).

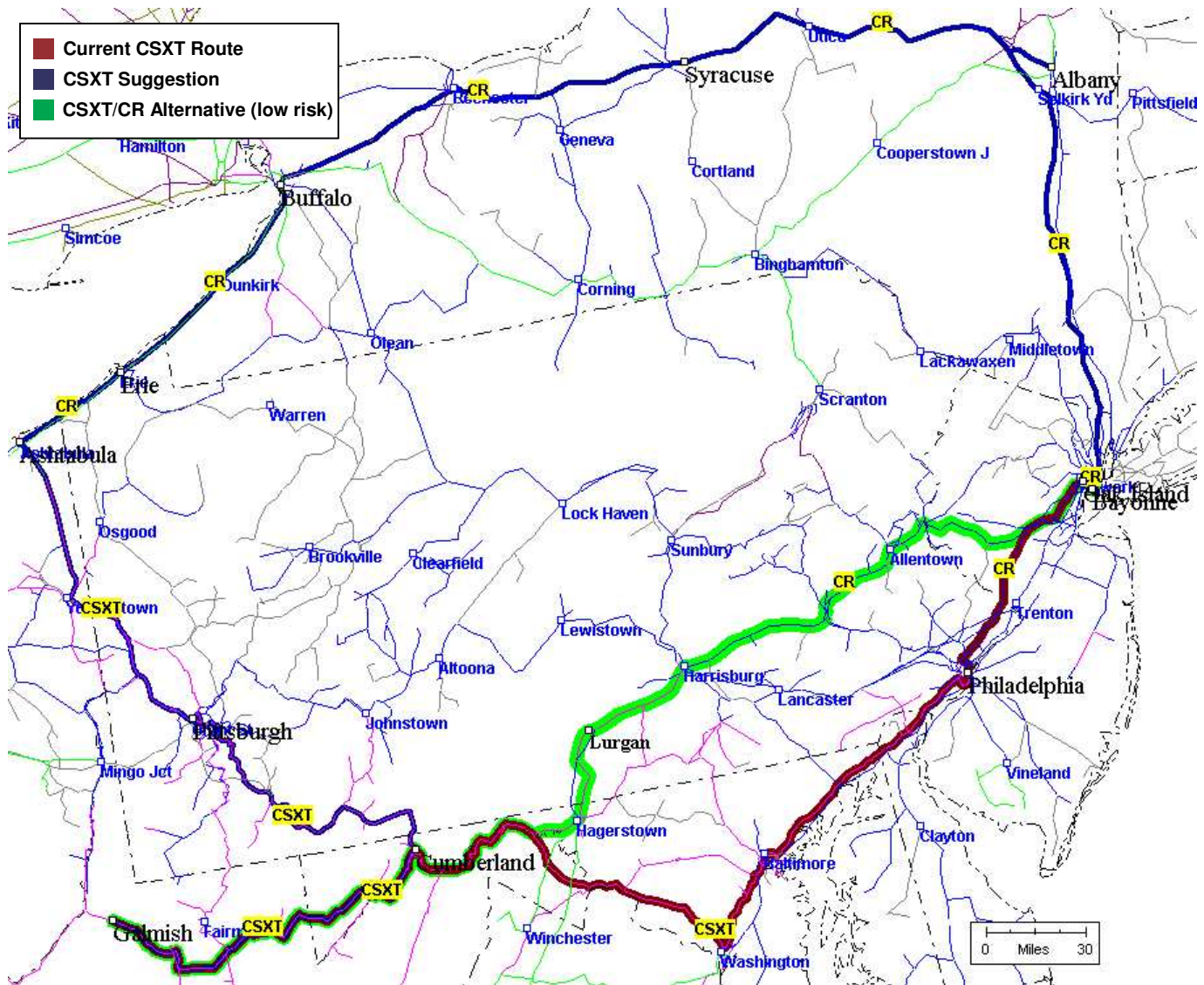
**dark blue line** = alternative route claimed by CSXT to be only feasible route for avoiding Washington, DC.

**bright green line** = Norfolk Southern Route, I-81 Corridor (alternative with lower population exposure)

**violet line** = Eastern Shore route (alternative with lower population exposure).



## Alternative Routes to CSXT Existing and Proposed Routes for Galmish, WV -- Bayonne, NJ



**dark red line** = existing route used by CSXT from Galmish, WV -- Bayonne, NJ (through Washington, DC).

**dark blue** = alternative route claimed by CSXT to be only feasible route for avoiding Washington, DC.

**bright green** = alternative with lower population exposure.



**Petition for Reconsideration  
to STB**

**Exhibit 5**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA**

CSX TRANSPORTATION, INC.,

Plaintiff,

vs.

ANTHONY A. WILLIAMS *et al.*,

Defendants

SIERRA CLUB

Defendant-Intervenor.

Civil Action No. 1:05CV00338 (EGS)

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**DECLARATION OF RONALD P. KOOPMAN**

I, Ronald P. Koopman, do hereby declare:

1. The following is based on my personal knowledge.
2. From 1967 to 2003, I worked at Lawrence Livermore National Laboratory, performing research on a range of issues including modeling and experiments on atmospheric dispersion and combustion of large-scale, denser-than-air, hazardous gas releases, review of weapons plutonium disposition issues and options, nuclear criticality safety, integrated safety analysis, radiation safety, and chemical and biological counter-terrorism work for the United States Department of Energy and Department of Homeland Security. During this time I served *inter alia* as Fluid Dynamics Group Leader and Program Leader of the Liquified Gaseous Fuels Program, the AVLIS Plant Project Nuclear and Safety Analysis Manager, and (in my four last

years at Lawrence Livermore Laboratory) as Manager of Special Projects, *Chemical & Biological National Security Program*.

3. In the course of the above work at Lawrence Livermore Laboratory, I did extensive large-scale field testing of the dangers associated with dispersing clouds of hazardous materials and found in many cases that such dangers were graver than generally believed.

4. For the past fifteen years, I have also served as a consultant on safety analyses relating to large-scale releases of hazardous materials. In 1990, I provided expert testimony for plaintiffs injured in a large hydrofluoric (HF) release during turnaround at the Marathon refinery, Texas City, Texas. In 2002, I provided expert testimony for the U.S. Department of Justice on the consequences of a bomb or rocket-propelled grenade attack on large liquified propane gas storage tanks.

5. I have a Ph.D. in Applied Science, University of California, Davis, (received in 1977) an M.A. in Nuclear Engineering (received in 1967) and a B.S. in Mechanical Engineering (received in 1965) from the University of Michigan. I am also a member of American Physical Society, the American Nuclear Society, the American Chemical Society, and am a Past Chairman, and the Joint Army-Navy-NASA-Air Force (JANNAF) Panel on Atmospheric Hazards and Modeling.

6. I have produced over 60 publications, invited talks, and papers on topics related to my research on large-scale, denser-than-air, hazardous gas releases and on nuclear and chemical and biological safety. A copy of my resume and list of publications is attached with this declaration.

## **Rerouting and Severity of Terrorism Risk to DC**

7. In locations where the transportation of hazardous materials presents a severe terrorist risk, the single most effective measure that can be taken to address that terrorism risk is to reroute the hazardous materials away from the target location.

8. In such circumstances, rerouting can reduce the risk by a huge margin, more than any other set of risk reduction measures.

9. I have testified to this effect before, when examining the need to reroute rocket fuel shipments (by the United States Air Force) away from crowded commuter freeways and dense populations in the Los Angeles area.

10. Any risk-based analysis of whether rerouting is needed requires assessing the risk of terrorism that exists in the location that such proposed rerouting is meant to protect.

11. I have seen no analysis by CSX to distinguish between terrorism and accident risks or to examine whether there are terrorism risks in the District of Columbia not present in other locations along alternative routes.

12. The terrorism risk in Washington DC is likely to be higher than in any other city in the United States. The Washington DC area is the heart of the United States government and the United States military and symbolic of what the terrorists wish to attack. The list of criteria for assessing the severity of the terrorism risk in a particular location include: population density in that location, transportation choke points (critical infrastructure), iconic buildings, and presence of key institutions that have been targets of terrorism, such as military and government facilities.

13. I cannot think of any place in the United States where the risk of a terrorist attack would be higher than Washington DC. Clearly the goal of the international terrorists that

currently threaten the United States is the disruption of the government and the communication of a political message by simultaneously attacking symbolic institutions and causing massive numbers of deaths. Nowhere would an attack be more dramatic and more effective than Washington DC.

14. The most important unknown factor is vulnerability to attack. We know that the terrorist will look for a vulnerable target. A large effort currently goes into protecting Washington DC from various kinds of attacks, including biological, chemical and nuclear attacks. The presence of railcars of chlorine and other toxic liquefied gases in the middle of the District of Columbia negates those protective efforts by delivering the hazard to the area where the most damage can be done. This makes the city vulnerable and makes it an even more attractive target.

15. The terrorism risk is increased in the District of Columbia by the presence of large tanks of poisonous gases, such as chlorine, and other ultrahazardous materials because they provide a vulnerable target whereby a terrorist strike could expose significant numbers of people to life threatening concentrations of toxic gases, possibly resulting in tens of thousands of deaths.

16. Shifting such hazardous materials shipments to routes that pass through locations lacking high-risk terrorist targets would almost certainly decrease the aggregate societal risk by substantially decreasing the terrorism risks (without increasing the accidental release risks, which would decrease when the potential harm of release to life and property becomes less severe). Risk is the product of consequences times the probability of occurrence and rerouting toxic rail cargo around high-risk population centers like downtown DC will reduce risk in two ways, by (1) reducing the probability that an attack will occur by moving lethal chemicals away from an

attractive target and (2) reducing harmful consequences that would result from such an attack by moving the hazard away from large population centers where thousands would be impacted.



I, Ronald P. Koopman, pursuant to 28 U.S.C. § 1746, do hereby declare under penalty of perjury that the foregoing is true and correct. Executed on March 14, 2005.

\_\_\_\_\_/s/\_\_\_\_\_  
Ronald P. Koopman

**Ronald P. Koopman Ph.D., P.E.**  
**Hazard Analysis Consulting**  
4673 Almond Circle, Livermore, CA 94550  
925-443-5324  
[rpkoopman@comcast.net](mailto:rpkoopman@comcast.net)

### **PRIVATE CONSULTING EXPERIENCE**

Provide hazard analysis consulting on liquefied natural gas and other liquefied gases. Analysis tasks involved document review, document preparation, scientific assessment, atmospheric dispersion model calculations, combustion calculations, legal testimony, and professional advice.

Clients and work include:

**Sandia National Laboratory** – Provide document review for *Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas Spill Over Water*, November 2004. Provide information from and connection to DOE sponsored LNG research program of the 1980's. Provide guidance and advice on LNG fire testing.

**BHP Billiton** – Provide guidance on safety analysis and safety issues associated with proposed Cabrillo Port deepwater LNG port.

**Malcolm Pirnie** – Provide review of LNG terminal safety analysis information.

**City of Vallejo** – Participate on team of independent consultants to review LNG terminal proposed for Mare Island. Provide safety analysis expertise including modeling of worst case LNG releases from unloading tanker ships and the terminal storage and off-loading facilities. Make presentations to the Vallejo Safety Committee and the city council. Contribute to report presenting work, *Liquefied Natural Gas in Vallejo: Health and Safety Issues*, January 16, 2003.

**US Department of Justice** – Provide expert witness testimony on the consequences of a bomb or RPG attack on LPG storage tanks in the city of Elk Grove, CA. Write up results in *Special Report, Consequences of an Adversarial Attack on a Large Propane Storage Facility*, September, 1999.

**Law firms** – Provide expert witness testimony on the nature and possible consequences of an accidental release of HF and isobutene from a refinery in Texas City, TX. Provide expert opinion and documentation on the consequences of LPG releases from the storage tanks in Elk Grove, CA.

### **EXPERIENCE AT LAWRENCE LIVERMORE NATIONAL LABORATORY**

**Retired in 2003.**

**Manager of Special Projects, Chemical & Biological National Security Program, 1999 - 2003**

Responsible for managing biosensor projects sponsored by DoD, DOE, USDA, managing the Bioforensic Demonstration and Application Program, and commercializing the handheld biosensor, HANAA.

**AVLIS Plant Project Nuclear and Safety Analysis Manager, AVLIS Project, 1995 - 1999**

Responsible for managing nuclear criticality safety, integrated safety analysis, and radiation safety groups associated with design, NRC licensing and deployment of a uranium enrichment plant using the Atomic Vapor Laser Isotope Separation (AVLIS) technology.

**Associate Energy Program Leader, Energy Program, 1990-1995**

Responsible for program development including the Zinc/Air Battery project, the Molten Salt Mixed Waste Destruction project, the Energy Economic Modeling project, the Environmental Technologies Program and organization of a review of weapons plutonium disposition issues and options.

**Liquefied Gaseous Fuels Program Leader, LGF Program, 1984-1990**

Managed and conducted research on the atmospheric dispersion and combustion of large-scale, denser-than-air, hazardous gas releases. Conducted a number of large-scale field experimental programs with liquefied natural gas (LNG), ammonia, nitrogen tetroxide, and hydrogen fluoride. Managed a research group (J-Group) of more than 20 people and a research program involving international collaboration with much of the chemical and petroleum industry, in particular with Gas Research Institute, AMOCO and Mobil, and with Federal agencies including DOT, DoD, EPA. Responsible for the development of state-of-the-art dense gas dispersion models including a unique three dimensional finite element model. Responsible for the conceptual design of the DOE Spill Test Facility and for oversight of Bechtel on the

## Ronald P. Koopman

final design and construction at NTS. Provided testimony to the US Congress and the California State Assembly on transportation and use of hazardous materials.

### **Fluid Dynamics Group Leader, LGF Program, 1978-1984**

Conducted experiments involving large-scale releases of liquefied natural gas (LNG) and other hazardous gases at China Lake, CA, and the Nevada Test Site. Responsible for design and construction of a unique radio telemetry based data acquisition system and for unique instrumentation for measurement of gas dispersion and combustion, including field deployable multiband infrared gas sensors. Broadened the program from liquefied natural gas to include other hazardous chemicals such as ammonia, nitrogen tetroxide, and hydrogen fluoride.

### **Physicist, Physics Division and, Nuclear Test Department, 1972-1978**

Did experimental low energy nuclear physics research using protons and neutrons coupled with nuclear reaction model calculations to investigate the systematic de-excitation of even-even nuclei by gamma ray cascade. Did criticality safety analysis using Monte Carlo neutron and gamma-ray transport codes.

### **Shift Supervisor/Reactor Physicist, Livermore Pool-Type Reactor, 1968-1972**

Responsible for shift operations and safety at the LLNL research reactor.

### **Engineer, Space Power Program, 1967-1968**

Helped design exotic nuclear reactors for use in space.

## EDUCATION

- Ph.D., Applied Science, University of California, Davis, 1977
- M.S., Nuclear Engineering, University of Michigan, 1967
- B.S., Mechanical Engineering, University of Michigan, 1965

## MEMBERSHIPS

- American Physical Society
- American Nuclear Society
- American Chemical Society
- Registered Professional Engineer, State of California
- Past Chairman, Joint Army-Navy-NASA-Air Force (JANNAF) Panel on Atmospheric Hazards and Modeling
- Past member, Editorial Board, Institution of Chemical Engineers journal, *Process Safety and Environmental Protection*
- Past member, FBI Scientific Working Group on Microbial Forensics

## EXPERT WITNESS TESTIMONY

- Mary L. Greene et al. v. Marathon Petroleum Co. et al., November 5, 1990; regarding hydrofluoric acid accident at Marathon Texas City refinery on October 30, 1987.
- United States of America v. Kevin Patterson, et al., May 14, 2002; regarding conspiracy to blow up the Suburban Propane storage tanks, Elk Grove, California.

## PUBLICATIONS

- Over 60 publications, invited talks, and papers. List available upon request.

PUBLICATIONS  
Ronald. P. Koopman

1. Hampel, V. E., and R. P. Koopman, "Reactivity Self-Control on Power and Temperature in Reactors Cooled by Heatpipes," Lawrence Livermore National Laboratory, Livermore, California, UCRL-71198, ANS Transactions, Vol. II, No. 2, November 1968.
2. Hansen, L. F., J. C. Davis, F. S. Dietrich, M. C. Gregory, and R. P. Koopman, "Levels of  $^{64}\text{Ga}$  via the  $^{64}\text{Zn}(p,n)$  and  $^{64}\text{Zn}(p,n, \gamma)$  Reactions," Phys. Rev., C 10, 1111, 1974.
3. Dietrich, F. S., L. F. Hansen, and R. P. Koopman, "Lifetimes of the First Two Excited States of  $^{66}\text{Ga}$ ," Phys. Rev., C 10, 1587, 1974.
4. Hansen, L. F., F. S. Dietrich, and R. P. Koopman, Study of the  $(p,t)$  and  $(p, ^3\text{He})$  Reaction Mechanism on  $^9\text{Be}$  by the Energy Dependence of the Cross Sections, Lawrence Livermore National Laboratory, Livermore, California, UCRL-76493 Abstract, 1975.
5. Dietrich, F. S., L. F. Hansen, and R. P. Koopman, "Cross Section for the  $^9\text{Be}(n,t)^7\text{Be}$  Reaction Between 13.3 and 15 MeV," Lawrence Livermore National Laboratory, Livermore, California, UCRL-7783, Nuclear Science and Engineering, 61, 267, 1976.
6. Koopman, R. P., Hansen, L. F., and F. S. Dietrich, "Systematics of Gamma Decay Through Low-Lying States in Even-Even Nuclei Excited by the  $(p,p')$  Reaction", Lawrence Livermore National Laboratory, Livermore, California, UCRL-77791 Abstract, Bulletin of the American Physical Society, Series II, Vol. 21, No. 4, 662, 1976.
7. Koopman, R. P., "Systematics of Gamma Decay Through Low-Lying Vibrational Levels of Even-Even Nuclei Excited by  $(p,p')$  and  $(n,n')$  Reactions", Lawrence Livermore National Laboratory, Livermore, California, UCRL-52275, June 30, 1977 (Ph.D. Thesis).
8. Koopman, R. P., A Review of the 1978 China Lake LNG Dispersion Experiments and Instrumentation—LLL Effort, Lawrence Livermore National Laboratory, Livermore, California, UCID-18012, December 1978.
9. Chakedis, D. V., W. C. O'Neal, and R. P. Koopman, Pictorial Review of the LLL Participation in the China Lake LNG Spill Test Series LNG 18, 19, 20, 21, Lawrence Livermore National Laboratory, Livermore, California, UCRL-18012, December 1978.
10. Multhauf, L. G., A. M. Frank, and R. P. Koopman, Remote Sensing for Diagnosing Vapor Dispersion in Spills of Liquid Energy Fuels, Lawrence Livermore National Laboratory, Livermore, California, UCID-18237, August 1979.
11. Koopman, R. P., B. R. Bowman, and D. L. Ermak, Data and Calculations of Dispersion of 5 m<sup>3</sup> LNG Spill Tests, Lawrence Livermore National Laboratory, Livermore, California, UCRL-52876, October 1979.
12. Koopman, R. P., Experimental Plan for 40 m<sup>3</sup> Liquefied Natural Gas (LNG) Dispersion Tests, Lawrence Livermore National Laboratory, Livermore, California, UCRL-18585, March 1980.
13. Koopman, R. P., "Vapor Dispersion from LNG Spills," Lawrence Livermore National Laboratory, Livermore, California, UCRL-52000-80-10, Energy and Technology Review, October 1980.
14. Bingham, G. E., R. D. Kiefer, C. H. Gillespie, T. G. McRae, H. C. Goldwire, Jr., and R. P. Koopman, A Portable, Fast-Response Multiwavelength Infrared Sensor for Methane and Ethane in the Presence of Heavy Fog, Lawrence Livermore National Laboratory, Livermore, California, UCRL-84850, November 1980.
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